MacWEEK™

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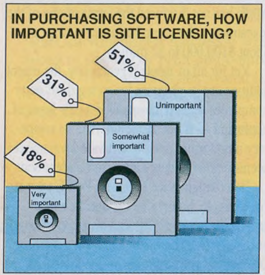


Source: May 1987 Creative Strategies/MacWEEK

Letraset will announce Ready,Set,Go! upgrade, companion product

BY JIRI WEISS
MacWEEK Staff

PARAMUS, N.J. — Letraset U.S.A. will announce at the Aug. 11 MacWorld exposition Release 4.0 of its Ready,Set,Go! desktop-publishing software.

It will also introduce a new program, code-named Realist, that will allow users to edit scanned images and create halftones that can be scaled and imported directly into their documents.

The updated Ready,Set,Go! 4.0 permits users to wrap text around irregularly shaped graphics at distances they select, says Jim Klauber, Letraset's vice president of sales and marketing.

Another major enhancement is the addition of style sheets similar to those in Microsoft Word. "That is extremely useful if you are doing a multi-page layout," Klauber says. "Two keystrokes will get you any style."

Version 4.0 will be able to handle documents up to 99 by 99 inches. The user interface has been completely redesigned, Klauber says. Instead of three toolboxes on the desktop, the

See LETRASET, Page 23

Apple's 'Solo' laser printer will break $2,000 barrier

BY ABIGAIL CHRISTOPHER
MacWEEK Staff

CUPERTINO, Calif. — A source within Apple Computer Inc. has confirmed that the company is developing a low-end, "personal" laser printer, code-named "Solo," that works without Adobe's Postscript page-description language.

The 300-dpi printer will be configured around the Canon LBP-SX engine, employ a QuickDraw interpreter and be priced at approximately $1,995, according to reliable sources close to Apple.

The printer is expected to appeal to a large segment of Macintosh users who do not need or cannot afford Postscript. However, some factions within Apple have argued against releasing the printer, according to sources.

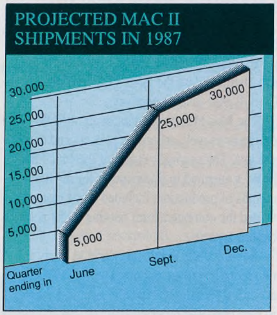
The conflict is the latest flare-up of a continuing dispute between Apple's research and development and marketing departments over the release of new technology, a Silicon Valley consultant says.

"This printer could 'cannibalize' the LaserWriter market. there is also a question of

See PRINTERS, Page 23

Apple shipping strategy for Mac IIs

Three in each dealer's window by month's end



BY JIM BEAVER
MacWEEK Staff

CUPERTINO, Calif. — Authorized dealers can expect to have three Mac IIs in their stores by the end of the month, according to the head of Apple Computer Inc.'s dealer sales. Godfrey Sullivan says that may not make much of a dent in many dealers' backlog of orders, but it is a start.

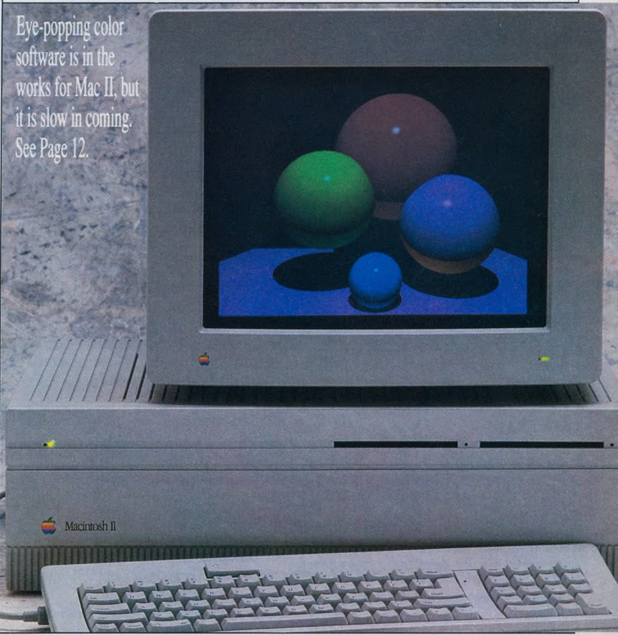
With about 800 dealers expected to be authorized by July, that is 2,400 units in retail outlets this quarter, halfway to analysts' projections of 5,000. Eventually, between 1,000 and 1,200 dealers will carry the Mac II.

One source close to Apple says the company made "a smart business decision" to sell all the machines it can manufacture in the near future. One ironic bit of fallout from that strategy is that production models of the Mac II are hard to come by for Apple's own internal developers.

That situation was confirmed by one corporate user who called technical support about a problem with his newly delivered production model and was told the support group did not have one yet.

Sullivan says the only sure thing at the moment is that demand far exceeds supply, which means the powerful new computer will

See SHIPPING, Page 23



Eye-popping color software is in the works for Mac II, but it is slow in coming. See Page 12.

MARK FARBIN

Flaws in Mac's ROM chips discovered

BY STEPHEN CUMMINGS
Special to MacWEEK

Minor bugs have been discovered in the fundamental operating instructions built into the Macintosh Plus and SE, according to consultants and other industry authorities.

Although some of the errors in the Mac's ROM chips have been corrected by revisions of the ROMs or the Macintosh System software, others persist, observers say.

Most recently, users have identified a bug in the Mac SE's ROM that causes a defect in floppy disk drive operations. On SEs equipped with two floppy drives, the upper floppy drive is substantially slower than the lower drive, say those who have experienced the problem.

Apple declined to comment on the reported problem.

Among the first to discover and publicize the SE's ROM bug were engineers at Central Point Software, a Portland, Ore., publisher of microcomputer utility software. According to Michael Brown, president, the speed deficit of the SE's upper drive became obvious during tests of the company's popular disk copy program, Copy II Mac, using the SE with two drives.

"We found the upper drive has drastically reduced performance, and it's also a lot noisier than the lower drive. With Copy II Mac, or any kind of full-disk copying program, it's two or three times slower than the lower drive," Brown says.

Central Point engineers discovered that the problem is caused by a ROM routine that mistakenly shuts the upper drive off and on again before data can be transferred to or from the drive, says Brown.

"We went mucking around in the ROMs and finally traced it down to a bug in an internal routine in the SE ROMs that Apple calls JDiskSel. The effect is that the upper drive becomes momentarily unselected and then reselected, and that takes time. The extra noise is the noise the drive makes as it's being selected and unselected," he says.

Brown also says that the basic operating functions programmed into the Mac ROMs are designed to be easily modified or "patched" via changes to the Macintosh system software used to boot the computer. In this way ROM corrections and upgrades can be made without actually replacing the ROM chips themselves.

However, Apple has yet to publicly acknowledge the SE bug and has announced no plans to remedy the problem with new system software.

Owners of the two-floppy SE models do have a solution, however, in the form of a software patch devised by Central Point Software and distributed on the latest version of the Copy II Mac disk, Brown says.

The Mac Plus has had its share of ROM problems as well, according to users and consultants. The original version of the Mac Plus' ROM, contained in Pluses made during the first months of production, included a bug that prevented the computer from booting under some circumstances.

Subsequently Apple has made as many as two more revisions to the Mac Plus ROMs, according to Steve Costa, a systems consultant in Berkeley, and other observers

"The SCSI driver in the original Mac Plus ROM was very slow, so that data moved much more slowly than the processor was able to receive it," says Linda Custer of the Berkeley Macintosh Users Group (BMUG). "My understanding is that Apple did a total rewrite of the SCSI manager. The ROMs in the new Plus probably contain the new SCSI driver."

Yet another bug may still exist in the ROMs of all Macintosh models now being sold, this one impairing users' ability to recover mistakenly deleted files.

"We've heard from a lot of people who reported the problem to Apple, and we expected the new version of the system (Version 4.1) to correct it. But the new system didn't have a fix and apparently Apple isn't interested in the problem," Brown says.

According to Costa, Apple quietly changed the ROMs on later Mac Pluses to correct the bug but did not offer the revised ROMs to owners of the early machines having the bug.

Again, Central Point has taken matters into its own hands and has devised a software patch that can be added to the boot system file to allow undeleted programs to function properly. The patch is included with the company's "Undelete" utility on the Copy II Mac program disk, Brown says. ■

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Apple suspends investments in outside software firms to avoid conflict

BY DON CLARK
Special to MacWEEK

Apple's year-old venture capital arm has suspended equity investments in horizontal software companies in a move to limit conflicts of interest with Apple's new software spinoff.

The suspension is aimed at companies making packaged productivity software — the major focus of Apple's new software company. It will stay in effect until the software unit is spun off from Apple through a public offering, according to Daniel Eilers, director of the strategic investment and corporate development group.

Apple's decision illustrates its continuing sensitivity to accusations of unfair competition with the very same software firms it is simultaneously trying to encourage. The charge from third-party vendors flared up recently when Apple was working internally on the 4th Dimension database, and lingered even after Apple announced the separate software venture as a way to minimize competitive tensions.

The moratorium on investment also shows the delicate task faced by Eilers' internal venture capital group, which has been deluged with business plans by aspiring entrepreneurs since it was established in May 1986. Eilers says the group's experience was a contributing factor in Apple's decision to set up a separate software publishing entity.

"We saw a lot of very exciting, breakthrough software being developed [by companies] that did not have the financial wherewithal to successfully market their own products," Eilers says. "But not all of them fit our investment criteria."

The venture group's charter is to take small minority stakes in companies believed to have a vital strategic role in Apple's future. Eilers and Horace Enea, who acts as a co-partner in charge of the group, say they expect the unit to have sealed five investments by the end of June. The only recipient firms disclosed are Forethought Inc., maker of desktop-presentation software (PowerPoint), and OSI software vendor Touch Communications.

In structuring the investment group, Apple has attempted to avoid the mistakes of large companies that have tried to get into the venture capital business. Conflicts of interest between corporate investors and entrepreneurs has been a pervasive problem.

One of the most obvious conflicts would be for a maker of Macintosh software or peripherals to make an equivalent product for IBM-compatible machines. Eilers, who wants to make a profit when he cashes out his investments in addition to selling Apple computers, vows never to block a company from broadening its market.

"If a company is successful on the Mac and decides that its next step is to make an MS-DOS version, we won't stand in their way," he says.

Forethought's PowerPoint software, for example, is expected to be translated to the IBM-Microsoft Windows environment. Adobe Systems, an extraordinarily successful Apple investment that predates Eilers group, has been working with IBM and Hewlett-Packard as well as Apple. One way to minimize conflicting goals, Eilers says, is to avoid sitting on the boards of the companies Apple invests in. Another is to always work in concert with other venture capital firms, letting another take on the role of lead investor. Eilers says Apple must be free to end investments at some later date if conflicts are unavoidable — without leaving a company in the lurch.

Apple has tried to reinforce its commitment to the venture capital group by setting up a dedicated pool of money for that purpose. The amount has not been disclosed, but it is rumored to total about $20 million. Though Apple has not disclosed the terms of any of the investments, the group has a target range of about $100,000 to $2 million.

Yet for all of Apple's generosity, the recent additions to its program for aiding third-party companies seem to have added a new layer of confusion — if not suspicion. And its temporary moratorium on new software investments seems neither widely known nor understood.

Forethought Vice President Bob Gaskins, for example, brought up the question in a recent interview: "Why should Apple invest in software companies and then form a publishing company?" Asked for his own answer, Gaskin replied, "I have no idea." ■

MacCalc

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InfoWorld, November 3, 1986

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Macworld, December 1986

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"[Working] in MacCalc is easier than in Excel."
Macworld

"Designed to be easy to use, and succeeds admirably."
MACazine, March 1987

"MacCalc makes such excellent use of the Mac interface that it is a pleasure to use."
MacUser, September 1986

MacCalc produces quality output:

"MacCalc offers [the greatest] flexibility in page and font setup, and has the most printing options."
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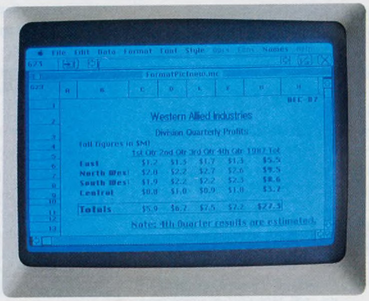
- Full desk accessory (DA) support and Switcher-compatibility: MacCalc integrates with your favorite charting or macro programs and DAs



Western Allied Industries

Division Quarterly Profits

(all figures in $M)

	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	1987 Tot
East	$1.2	$1.5	$1.7	$1.3	$5.5
North West	$2.0	$2.2	$2.7	$2.6	$9.5
South West	$1.9	$2.2	$2.2	$2.3	$8.6
Central	$0.8	$1.0	$0.9	$1.0	$3.7
Totals	$5.9	$6.7	$7.5	$7.2	$27.3

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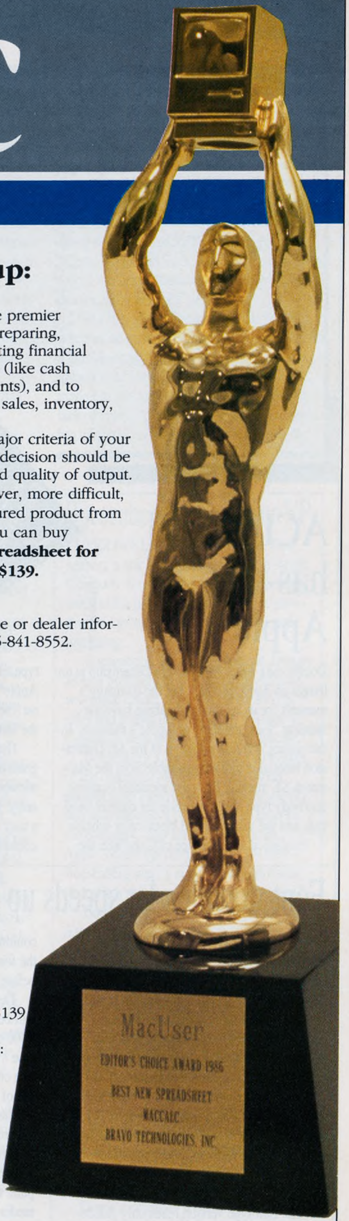

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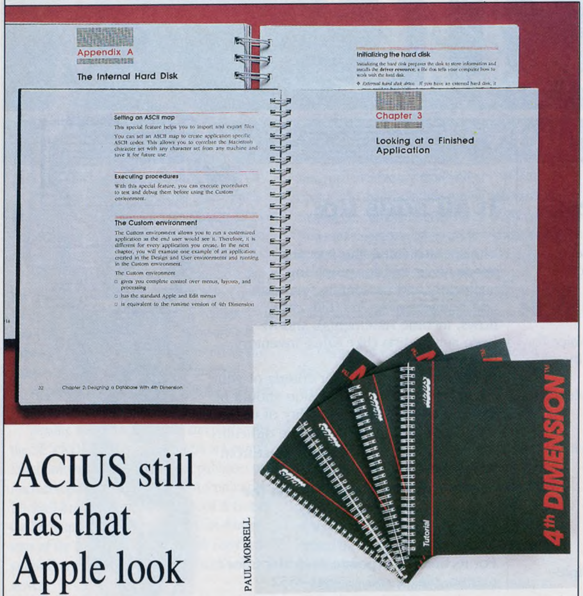


Appendix A

The Internal Hard Disk

Initializing the hard disk

Initializing the hard disk prepares the disk to store information and installs the **driver resource**, a file that tells your computer how to work with the hard disk.

◆ *External hard disk drives.* If you have an external hard disk, it

Setting an ASCII map

This special feature helps you to import and export files

You can set an ASCII map to create application-specific ASCII codes. This allows you to correlate the Macintosh character set with any character set from any machine and save it for future use.

Executing procedures

With this special feature, you can execute procedures to test and debug them before using the Custom environment.

The Custom environment

The Custom environment allows you to run a customized application as the end user would see it. Therefore, it is different for every application you create. In the next chapter, you will examine one example of an application created in the Design and User environments and running in the Custom environment.

The Custom environment

- ☐ gives you complete control over menus, layouts, and processing
- ☐ has the standard Apple and Edit menus
- ☐ is equivalent to the runtime version of 4th Dimension

32 Chapter 2: Designing a Database With 4th Dimension

Chapter 3

Looking at a Finished Application

PAUL MORRELL

ACIUS still has that Apple look

Double-take time. ACIUS' 4th Dimension is no longer an Apple product, but the company's manuals for its relational database have the familiar "look and feel" of Apple's manuals. In the picture above, the design of the 4th Dimension tutorial is indistinguishable from the Macintosh SE manual. Both use identical headline and body type, the same style for chapter headings and the same red and black color scheme.

Explained an employee of ComPage, the typesetting and design firm for many of Apple's manuals: "We had already begun work on [the ACIUS manuals] so we continued in the same style."

The much rumored but still unreleased program may strain eyes as well as computer memory. To reach the fourth dimension, apparently, you must digest four manuals: a tutorial, a user's guide, a programmer's reference and a command reference. ■

Font-downloader speeds up Linotronic printing

BY ELINOR CRAIG
MacWEEK Staff

HAUPPAGE, N.Y. — Time-consuming printing with the Linotronic 100 and 300 Imagesetters will soon be a frustration of the past, according to beta-test users of a new font-downloader utility program scheduled to ship at the end of this month from Linotype Co.

Presently, users can only download fonts to the Linotronic's hard disk with a special downloader. Until now there was only one such program available from an independent software developer, Michael Fryd's Linotronic Hard Disk Downloader from MEFCO Inc.

The Linotype version reads only Adobe fonts while Fryd's can read all fonts. The Linotype program may be able to handle other fonts, says Kevin Wandryk of Adobe, but it has only been tested with Adobe fonts.

Without a downloader, only 11 fonts can be stored on the Linotronic ROM and only three can be downloaded. Therefore, complex jobs cannot be completed on the printer without great time and effort, according to Frank Lee of MacTypeNet, a desktop-publishing service bureau. "It was ludicrous to release the printer as it is," he says. "I was outraged when I received the printer and I found out what it couldn't do. Essentially, it is useless without the fonts on-line. It is a machine that came out before its time."

The program, designed by Adobe Systems, will be distributed to Linotype's L100 and L300 customers, says Rosemary Muretta, Linotype's product manager. It stores font information on the Winchester hard disk and allows the use of up to 30 fonts per page.

Faster print time is one of the main features of the new program. "It will allow megabytes after megabytes of memory to go onto the hard disk in the printer," says William Wolfe, computer technician at Gips/Balkind Associates, media specialists in New York.

Once installed, the downloadable fonts act like built-in ROM resident fonts, eliminating the time-consuming process of transferring font information from the computer to the printer.

Even so, there remain technical glitches with the printers. "We have to experiment constantly because the L300 does not print out exactly like a LaserWriter (from Apple Computer Inc.), so we can't proof our work on the LaserWriter," says Wolfe.

The font downloader is not exclusively for the Linotronic, says Muretta. "It will work with any printer that has a hard disk," she says. ■

SNAPSHOTS

Replacement for Finder to be on CompuServe

PALO ALTO, Calif. — Andy Hertzfeld, a member of the original Macintosh development team, says he plans to distribute Version 0.95 of Servant on the CompuServe bulletin board by the end of the month. Servant is a replacement for Apple's Finder, developed by Hertzfeld, that allows users to open more than one application at one time on the desktop.

The new version works better with the Macintosh SE and II models, Hertzfeld says. "The old versions work on the new machines, but they have some problems."

Version 0.95 will have improved resource editing, allowing users to edit icons and cursors, and "Get Info" and "File Copy" commands, Hertzfeld says. Users will be able to download the new software from CompuServe free of charge. ■

Cornerstone monitor has high Mac II resolution

SAN JOSE, Calif. — Cornerstone Technology recently started shipping its Vista 1600 for the Macintosh II, a 19-inch monitor featuring a resolution of 1,600 by 1,280 pixels.

Listing for $2,195, the monitor is intended to optimize the high-end graphics capabilities of the Macintosh II. Vista 1600 is targeted at the desktop-publishing as well as at the CAE/CAD/CAM, medical-imaging, software-engineering and expert-system development markets.

"With extremely high-resolution monochrome graphics, we are trying to bring workstation functionality to personal computers," says Barry Dickman, Cornerstone's president.

The monitor can either replace the original Macintosh II monitor or be used with it. The Mac II is designed to utilize more than one monitor simultaneously. Vista 1600 features a non-interlaced screen, a screen refreshment rate of 67 Hz and a video bandwidth of 200 MHz, producing a virtually flicker-free screen. ■

Borland product teaches Pascal on the Mac

ANN ARBOR, Mich. — Borland International announced an interactive Pascal tutorial last week at the MacHack '87 Programmers' Conference held here.

The $69.95 Turbo Pascal Tutor for the Macintosh includes a 700-page textbook and 50 sample programs with documented source code on a disk. It is intended for novices as well as for programmers who know Pascal but want to learn how to do it on the Macintosh, according to Borland. The product is scheduled to begin shipping in July.

Turbo Tutor is divided into five sections, ranging from a Pascal tutorial for the novice to a lesson for programmers on how to handle memory management and QuickDraw, the Macintosh visual interface. Users pick any topic in Pascal, says David Intersimone, Borland's director of product services. "It shows them a sample source-code procedure that deals with that topic. They can scroll through it and run it … with output appearing on a window on their screen."

Borland International is located at 4585 Scotts Valley Dr., Scotts Valley, Calif. 95066. ■

Jasmine releases BackPac 40 external drive

SAN FRANCISCO — Jasmine Technologies is scheduled to start shipping its 40-Mbyte external hard disk, the BackPac 40, July 15.

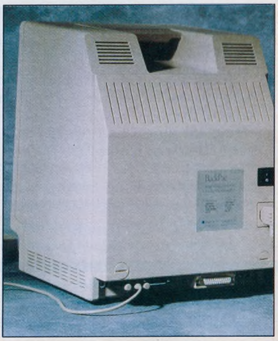
Priced at $1,299, Jasmine says it intends the product to be as convenient as an internal hard disk but without the danger that the computer will be unusable if the hard disk is not functioning.

BackPac mounts on the rear of the Mac Plus and connects to the CPU through the computer's power cord so the power switch operates both the hard disk and the machine.

Sporting the same color and texture as the Mac Plus casing, the BackPac is designed to be as portable and invisible as possible. It weighs around three pounds; even with the hard disk attached, the computer will fit into a carry bag.

BackPac features a 29-millisecond access time and is cooled by convection to eliminate fan noise. Conner Peripherals produced the 3.5-inch drive.

Jasmine Technologies is located at 555 De Haro St., San Francisco, Calif. 94107. ■



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DCA's IRMA gives Macintosh SEs and IIs access to IBM mainframes

BY CLAIR WHITMER
MacWEEK Staff

ALPHARETTA, Ga. — One more obstacle to the use of Macintosh computers in the corporate environment has fallen. With the MacIRMA board from Digital Communication Associates Inc. (DCA), users will be able to access and manipulate data stored on IBM mainframe computers from a Mac SE or II.

The new product, a Macintosh version of DCA's successful line of IBM terminal emulators, transforms a Mac into an IBM 3270 terminal that can communicate with all other devices on an IBM Systems Network Architecture network. SNA is the predominant network architecture used by Fortune 1,000 corporations.

DCA plans to start distribution in early fall. The product will list for $1,195. Its functions and features are based on those of E78 Plus, the emulation software for the IRMA 2, also recently announced by DCA.

MacIRMA is a plug-in card that inserts in the slots available in the newer Macs. Accompanying software includes separate emulation and file transfer programs. In emulation mode, the program operates through the use of keyboard commands; the mainframe cannot distinguish between the Mac terminal and a dedicated 3270 device. Once data is accessed, it can be transferred to the Mac hard disk through the file transfer program.

Unlike DCA's IRMA boards for the IBM PC, MacIRMA's file transfer program is designed to simulate the appearance of standard Mac applications, including the use of pull-down menus and icons. It also is intended to minimize the training on IBM communications that a Mac-user needs to run the program.

DCA was the first company to produce terminal emulation software for PCs and has sold about 400,000 units in the last five years. According to Bob Zack, vice president of DCA Corporate Communications, MacIRMA may be as successful as its PC predecessor.

Now that the business sector has begun to discover an increasing range of applications for a graphics-oriented interface, it is discovering a greater need for the machine that has led the market in this area — the Macintosh. But its lack of connectivity with IBM-based products has inhibited its flow into the workplace. ■

Deneba enters Macintosh graphics market

BY CLIFF LEHMAN
MacWEEK Staff

MIAMI — Deneba Systems kicked off its entrance into the Macintosh graphics market with the announcement of a powerful new program called Canvas to be released July 1.

The new program combines all the capabilities of "object-oriented" programs like MacDraw with the features of "bit-map-oriented" programs like MacPaint, according to Deneba.

Canvas, priced at $195, also boasts complete file and Clipboard compatibility with MacPaint, MacDraw and all programs supporting the Apple standard PICT format. Creating complex special effects is easy with Canvas' object and duplication features, the firm says.

Until now, Deneba has been content to work as a developer, with credits such as Merriam-Webster Thesaurus for Microsoft Word 3.0 and MacLightning. However, with the growth of the Macintosh market, Deneba saw this as a good time to begin marketing its own software, according to Manny Menendez, president of Deneba Systems.

Special effects on Canvas are not based on PostScript, so users without PostScript devices can still use the program, says Menendez. Canvas integrates scanned images of 300 to 2,400 dpi, PostScript- and MacDraw-style objects in a single layer.

Users can view and edit drawings in any size from 3.125 percent reductions to 3,200 percent enlargements. The system also provides WYSWIG text editing, the ability to work with an unlimited number of open windows, multiple-page MacPaint-style bit maps, and an 8-by-4-foot drawing area.

A series of art libraries, called MacrObject, is available separately for $29.95. The libraries come in several versions, including flow chart, business forms and circuit elements.

A Desk Accessory version with most of the features of the main program is also available separately for $99.95. Called Canvas Desk Accessory, it is calculated to fit in with desktop publishers who have already invested in programs such as PageMaker and Ready,Set,Go! 3, according to Menendez. ■

Ultra-high resolution graphics boards for Macs

BY ELINOR CRAIG
MacWEEK Staff

MOUNTAIN VIEW, CALIF. — SuperMac Technology has announced the shipment of SuperView, an ultra-high resolution black and white graphics board for the Macintosh SE, and Spectrum, a high-resolution graphics controller board and color monitor for the Macintosh II.

In addition, SuperMac announced retail price reductions on its DataFrame series of external SCSI hard-disk drives. "We are now one of the most competitive [firms]. We did this to compete with the low prices available through mail-order companies," says Gary Eisenstein, a sales representative for SuperMac.

Both of the new boards work with SuperMac's new 19-inch high-resolution graphics monitor, as well as the monitors introduced by Apple. All units are priced separately.

SuperView contains the features of the Spectrum color board, except that it operates only in monochrome. It fits into the open slot of the Mac SE. SuperView will drive any analog or TTL black and white monitor with a resolution equal to or less than 1,365 by 1,024 pixels, providing more than eight times the viewing area of the original Mac.

SuperView also can be connected to a video projection system for group viewing. It supports multiple contiguous monitors simultaneously, offering additional usable work area and allowing users to tackle complex graphic production tasks.

Spectrum offers a selection of 256 colors from a 16.8 million color palette, using an 8-bit color chip and 768 Kbytes of RAM. A 4-bit chip with 512 Kbytes of RAM provides 16 user-definable colors from a palette of 4,096 colors, and 16 fixed colors are available with 256 Kbytes of RAM and no color chip.

Spectrum will drive SuperMac's monitor at up to 1,024 by 768 pixel resolution, and Apple's 13-inch color or 12-inch black and white monitors at 640 by 480 pixel resolution. Spectrum also is completely compatible with all existing Macintosh software. ■

LATE NEWS

Boesenberg made senior VP

CUPERTINO, Calif. — Charles M. Boesenberg's star continued its ascent at Apple Computer Inc. with the announcement last week of his promotion to senior vice president and group executive, U.S. sales and marketing.

Boesenberg, 38, joined Apple in January as vice president of U.S. sales. In April he was made acting group executive of U.S. sales and marketing, replacing William V. Campbell, now with Apple's new spinoff.

Boesenberg's "considerable knowledge of the computer industry and his broad management experience, both domestically and internationally" have been an asset to the company, says Delbert W. Yocam, Apple's chief operating officer. He said Boesenberg was "a significant contributor to Apple's sales and marketing strategies."

Boesenberg will be responsible for Apple's sales, support and distribution channel development in the United States, as well as the company's strategies for developing new and existing markets in business, education and for consumers. ■

Quark lifts copy protection

DENVER — Quark Inc. has announced that it has stopped copy protecting XPress software in the United States and Canada.

"We will give non-copy protected versions of the software to all purchasers of XPress who have bought our extended warranty," Quark President Fred Ebrahimi said.

Quark's extended warranty costs $100 a year and includes unlimited technical support, free upgrades and the company newsletter. All buyers receive limited warranties that give these services for 90 days.

Quark requires each user to register his name on the software before being able to use the program. Adobe also recently adopted this procedure for its Illustrator product.

Ebrahimi also said that Quark will introduce an upgrade to the program that will include support for Microsoft Works, Microsoft Word 3.0 and TIFF (Tag Image File Format). ■

Expanded keyboards give Macintoshes the 'look and feel' of IBM machines

BY MARY FRIEDLAND
MacWEEK Staff

Expanded keyboards for Macintoshes are giving Apple computers an unprecedented IBM-like look and feel.

DataDesk International of Van Nuys, Calif., recently announced an IBM-style keyboard for the Macintosh SE and II, following its May 15 release of one for the Macintosh 128, 512 and Plus. And on March 2, Apple previewed its extended keyboard for the Mac, a near-clone of IBM's.

Apple has not started shipping extended keyboards yet. Sources close to the company say Apple is reluctant to publicly salute IBM standards.

DataDesk's ADB101 keyboard for the Macintosh SE and II mimics IBM's enhanced keyboard for the XT, AT and PS/2. "This is the first keyboard equipped with a software interface for applications that don't recognize function keys," says DataDesk's president, Robert Solomon. Scheduled to ship in late June, the product will retail for $169.95.

The 101-key keyboard plugs into the new Apple Desktop Bus (ADB) interface. That interface allows function keys — keys that Apple previously opposed — to achieve full MS-DOS compatibility, say Apple insiders. SEs and Mac IIs can run MS-DOS applications with any of the coprocessor boards coming on the market. Fifteen function keys span the top of the ADB101. Six page-control keys and T-configured cursor control keys fit next to the numeric keypad. All keys are programmable.

The programming software resides in Apple's pull-down menu. It defines function keys in three ways: by assigning mouse movements such as menu selections, by assigning keystroke combinations (macros) and by reprogramming window-manager keys, the alternate mode of the numeric keypad that scroll, zoom and move to other pages.

Solomon says he sees DataDesk keyboards as the Macintosh's wedge in the doorway of big corporations. "Corporate America is accustomed to entering data from a keyboard. They don't want to go to a mouse," he says.

Standardizing Mac keyboards to IBM makes sense, says DataDesk's executive vice president, Bill Childress. "You measure the speed of computer power in nanoseconds. You can lose a lot of speed in unfamiliarity."

While standardized keyboards are perceived as a plus for users who frequently switch between Macintoshes and IBMs, analyst John Wardley of International Data Corp. of Framingham, Mass., says he does not think standardization is essential. Wardley says, "You only need an extended keyboard (on a Macintosh) if you run MS-DOS applications or do terminal emulation with a lot of function keys. I don't think corporations will buy Macintoshes just because of the keyboard."

Microsoft Corp. of Redmond, Wash., has programmed a set of macros for Word 3.0 on DataDesk keyboards. A DataDesk brochure is stuffed in every Microsoft Word package.

Jonathan Prusky, former product manager of Word for the Mac, has long pressed for full-function Macintosh keyboards. "During development of Word 1.05, we argued with Apple to put in cursor control keys," Prusky says. "But (Steven) Jobs was hard core and didn't want to do it."

By version 3.0, the bone of contention was function keys, which Prusky says are essential for power users. "Word is the most powerful word processor around," he says. "But the real measure of a program's power is how accessible that power is."

Tangent Technologies of Atlanta, Ga., has sold extended Macintosh keyboards since January 1986. According to Steve Simpson, sales support manager, the project was seeded by an engineer who, while writing a book, developed a disability John Dvorak dubbed "MacWrist." Tangent's keyboard, PCMac Key, sells for $120. Like the original IBM XT keyboard, it has 10 preprogrammed function keys.

Mike Baily, program plans specialist at Lockheed Corp., uses DataDesk's extended keyboard for the Mac Plus. "It works great," Baily says. "The macro language is simple to use." Once the SE version is released, Baily plans to standardize a network of Mac Pluses and SEs with DataDesk keyboards.

Data Desk President Solomon says he tested his product on Eric Zarakov, Apple's desktop-publishing manager because Zarakov was an absolute antagonist. Zarakov says, "'A keyboard is a keyboard is a keyboard,' I thought back then." Now he is a true believer: "I use (DataDesk's) keyboard all the time. I like the way it feels, and the convenience of the cursor keys." ■

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Tangent tightens link between PCs and Macs

BY CLAIR WHITMER
MacWEEK Staff

NORCROSS, Ga. — Tangent Technologies plans to strengthen the PCs' ability to link with Macs through a new line of network-related products. The first release is TangentShare, priced at $350.

The company also hinted at a number of other projects under development, including a file server compatible with both PCs and Macs. According to Guy Mirande, Tangent's vice president, the Tangent server project may be announced at this August's MacWorld Expo.

Shipped last week, TangentShare is a plug-in card designed to give IBM machines the ability to access AppleTalk Filing Protocols (AFP) on an AppleTalk network.

Once the included AFP software is installed, the PC becomes a client of the server and can read both PC and Macintosh files through pull-down menus or MS-DOS command keys.

A more inclusive package, Macbridge Plus, lists for $375 and incorporates the TangentShare card, the AFP software, PostScript utilities, PS plotter, CAD/CAM converter and electronic mail software.

Tangent, a company devoted to connectivity products, is working on several other projects intended to strengthen compatibility between PCs and Macs. These include a PS/2 Micro Channel bus-interface card and a printing package for the Mac that bundles together PostScript utilities currently available from Tangent for the PC.

Within 90 days Tangent plans to release an intelligent PostScript spooler for PCs or Macs that will run from a 20-Mbyte disk instead of RAM, as most other spoolers do.

A project temporarily referred to as AppleTalk-on-a-chip, is intended to increase network speed from 230.4 kilobits to 2 megabits but running over the same RS-422 cable as AppleTalk.

The project is on hold until Tangent can find "technology partners" to help pay for further research. If developed, it would be faster, more versatile and cheaper than a card. ■

Mac's open architecture allows use of new color monitors from Princeton

BY CLAIR WHITMER
MacWEEK Staff

A 12-inch color monitor compatible with the Macintosh SE and II, the IBM PS/2 and other existing IBM computers has begun limited shipment from Princeton Graphic Systems.

The new monitor, called Ultrasync, is designed to introduce CRT technology compatible with either TTL or analog inputs for the PS/2. But the introduction of Mac open-architecture systems allowed the product to be developed for the Macintosh as well.

"It made us realize that there is a need for a universal monitor," says Herm Georigi, marketing manager for the Princeton, N.J., firm..

The monitor automatically senses the mode or the interface being used and corresponds the screen size and refreshment rate.

Full shipments are slated to begin in late August or early September. The monitor is now priced at $795.

According to Georigi, Ultrasync is compatible with all available Mac II programs and includes the complete palette of colors. It has a resolution of 800 by 600 pixels and a video bandwidth of 30 MHz. The dot pitch, which measures the distance between phosphors of like color on the screen, is 0.28mm. High resolution monitors usually have a dot pitch of 0.31 or less.

The monitor includes a built-in tilt and swivel base. The screen is based on a black matrix tube and uses a non-glare etched screen. For writing text, a single switch is provided for choosing green, amber, or white on blue display.

For the IBM computers, Ultrasync includes automatic adjustment with any horizontal-scan frequency within 15 kHz to 35 kHz and any vertical frequency within 45 Hz to 120 Hz.

Princeton's LS-300 desktop image scanner is another product representative of its efforts to enter the Mac market. It was originally marketed specifically for IBM-based machines but was later made Mac-compatible by the release of an interface adapter, MacScan, by New Image Technology of Seabrook, Md.

Georigi says Princeton has no other specific projects for the Macintosh under development, but adds that the company intends to continue marketing Mac-compatible products. ■

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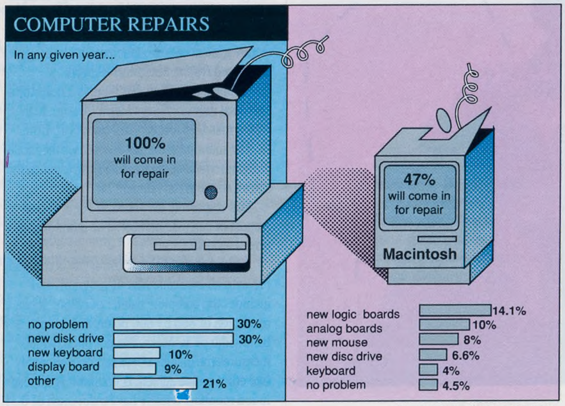
Macintoshes showing reliability: Repair rate low at Carnegie

BY MARY POWERS
Special to MacWEEK

If the past three years have been any indication, all of Carnegie-Mellon University's IBM PCs will come in for repair at least once this year.

That compares with an annual repair rate of 24.5 percent for the university's 1,500 Apple Macintoshes, says Bill Sholar, Carnegie Mellon assistant director of computing services. "We found a 100-percent failure rate" with the IBM PCs and XTs, he says, explaining that he expects 700 repair calls this year for the Pittsburgh campus' 700 machines. "These numbers confirm that the more compact the machine, the smaller the number of components inside, the less power it uses, the less likely it is to fail," Sholar says. He recently joined the University of Texas Center for the Health Sciences in Dallas as director of academic computing.

Sholar says he was surprised by the findings. Going into the study, he says he expected Macintosh annual repairs to average 50 percent. He began the study three years ago to help the university plan for future staff and equipment.



Source: Carnegie Mellon University

Since 1981, the private university, which has an undergraduate population of about 7,000, has received about $35 million in research support from IBM. A figure for the university's Apple research support was unavailable, but spokeswoman Carol Pearson says it was below the IBM total. Sholar says he was unaware of comparable reliability studies, but adds that "almost two years ago we had a conference here for people distributing large numbers of computers on campuses.We discussed some preliminary numbers and most people said their experience mirrored ours."

Neither IBM nor Apple would comment on the study. Stella Kelly, an Info Corp. microsystems analyst, says she was not surprised by the study. "The more parts you add to a given machine, the more chance you have of a breakdown. The Macintosh product is now achieving significant sales in the business market, and business users require — for productivity — that their machines be reliable," she says.

Sholar says he found that computer problems were related to the number of people and the amount of time a machine was used. Macs that were available for student use 24 hours a day had an annual repair rate of 47 percent, compared with 15 percent for Macs used by individuals. "The difference is a matter of how they are used. Machines in public places are likely to be kicked if they malfunction."

Of the Macintoshes brought in for repairs, logic boards accounted for 14 percent of the problems; 10 percent of repairs were related to analog boards; and 8 percent were mice. In 5 percent of the machines brought in, technicians could find no problem. IBM PCs were more likely to come in due to disk drive malfunctions. Thirty percent of the repairs were linked to that component, 10 percent to keyboards and 9 percent to display boards. In XTs, disk drive failures accounted for 15 percent of repairs.

Fifteen percent of IBMs brought in for repairs needed a minor adjustment or reloading of the hard disk, Sholar says. IBM users brought on another 15 percent of the problems themselves by using the wrong software and similar errors. Ajit Kapoor, Dataquest Inc.'s vice president of educational publishing and marketing analysis, said the study mirrored his experience. He said IBMs have historically been more difficult for novices to operate successfully. "You are going to have a lot of trouble until you get it set up just right," he said.

Both Kapoor and Kelly say the new IBM Personal System/2 computer design should reduce user errors. The study reinforces the Mac's user-friendly image, Kelly said. "The Mac has always been lauded for the fact that the user requires less time to master the system. The novice runs more of a risk with the IBM PCs," she says.

Sholar estimated that making the machine easier to use could reduce IBM repair calls by 30 percent. The university study reflects machines brought to the university-operated repair service. While the number of IBM PCs and Macs at Carnegie-Mellon has changed during the study, Sholar says the rate and nature of repairs each required has remained within several percentage points.

Noting that IBMs were relatively easy to repair, he speculates that his department was not handling all those repairs. "The Mac doesn't lend itself to the user repairing it himself. They are cheap to fix but require the machine to come back to us," he says. In a slightly different analysis of the Mac repair data, Sholar says he found that of 205 university-owned machines that he checked, 38 had needed repair during their lifetime. The machines had been in use from several months to several years. "Based on that calculation, we would now expect to see a machine every 60 months for repairs," he says.

"The more the machine is designed for the purpose you are going to put it to, the better the chances of it working well. The older Macs, you bought it and that was what you got. With the IBMs, you bought the empty case and you could add more components. You could tailor it more to your use, but that also meant more pieces, more things to go wrong," he says. Sholar says he is not worried that the newer, more flexible open Mac design, allowing users to add more components, will be followed by a subsequent jump in repairs.

"Over time, the components have become more reliable. I'm not worried about that today as I would have been a couple of years ago. The quality control seems to be better," he says. ■

TOBY SEGER

Bill Sholar's study has shown the Mac to be reliable.

Electronic tutor for PageMaker uses video to provide one-on-one teaching and feedback to users

BY MARY FRIEDLAND
MacWEEK Staff

An "electronic teacher" for Aldus' PageMaker 2.0 on the Macintosh called Videotutor was released recently by Computer Training Resources Inc. of Honolulu.

The basic-to-intermediate level tutorial retails for $129.95.

Videotutor competes with other recently released third-party training packages for PageMaker, according to Mike Solomon, Aldus vice president of sales and marketing. The Seattle-based company is reviewing Videotutor, along with other training packages, for potential co-marketing material.

Solomon says he does not foresee packages like Videotutor interfering with PageMaker Classroom, the Aldus training package, but rather complementing it by serving users who want one-on-one training.

The heart of Videotutor is a 90-minute videotape that describes, with examples, how to produce a PageMaker document. Augmenting the video are a workbook, an audio tape and a disk of the video's application files.

The four-part system is billed as a "closed loop" of learning. Users view procedures, such as cropping a picture, on the videotape and then try the procedures on PageMaker, using the workbook and the audio tape for reference. To complete the learning loop, they compare the PageMaker files they created with the examples on the package disk.

Videotutor begins by reviewing key operations of PageMaker, such as how to use a mouse, manipulate handles and select from dialog boxes and menus. It gives step-by-step instruction in PageMaker's major functions, such as placing and formatting text, manipulating graphics and creating master pages.

The system is designed to be used by one person at a time.

Al Baker, president of Computer Training, designed Videotutor. Baker has a background in multimedia education and began using a Mac in 1985 to create teaching materials. He went on to manage a desktop-publishing business and teach desktop publishing at a community college. Videotutor evolved from Baker's classroom encounters.

Baker claims video is a more effective trainer than a live classroom teacher.

"It is much more flexible because users can go at their own pace and repeat lessons as often as needed ... The camera focuses the user's attention on the important part of the lesson and excludes distracting background details," Baker says.

Early users of Videotutor say they are satisfied with the package.

Jodi Belknap, co-owner of a desktop-publishing firm in Honolulu, says the system is "beautifully organized and easy to use." Belknap says she applauds the clarity of the sections on tabs, kerning and hyphenation, procedures she describes as among the more difficult-to-use aspects of PageMaker.

But Tim King, instructional designer at Hewlett-Packard in Cupertino, Calif., would like to see more general information on functions such as kerning for users unfamiliar with typography. ■

What is PostScript?

What is a page-description language?

PostScript is a computer programming and translation language for defining the way typographic fonts, vector-based geometric drawing objects and bit-mapped images are printed on a page. It translates ASCII files into resolution-independent and printer device-independent instructions.

Its major contribution to high-resolution laser printing is in the use of mathematical Bezier curves to geometrically define the outline of a letter form rather than create it with a series of dots that form a letter with jagged edges.

The language also can manipulate and enhance these geometrically defined letters with sheer truncation, rotation, fill, perimeter outline and variable sizing.

The user can create graphics and special typographic effects directly in PostScript language code or through higher-level interfaces available in such Macintosh software packages as Adobe Illustrator, Cricket Draw, Altsys' Fontographer, Letraset's Ready,Set,Go! 3 or Quark XPress.

Although originally residing as software in output devices, the language is now typically imbedded directly in the silicon chips in PostScript-based printers. ■ — *By Stuart Silverstone*

Standard sought for page description languages

BY STUART SILVERSTONE

Special to MacWEEK

WASHINGTON — An electronic publishing laboratory for testing printing output devices and establishing standards for page-description languages was announced recently by the National Bureau of Standards (NBS) at its Department of Commerce headquarters in Washington, D.C.

Although open to all page-description languages, Adobe is the only vendor to respond thus far, solidifying the role of its PostScript interpreter as the de facto standard for electronic publishing. More than 15 PostScript-based output devices, including Apple's LaserWriter and Allied Linotype's Linotronic ImageSetter, will be installed at the NBS demonstration lab. The lab will serve as an aid to both government and private-sector users in evaluating their electronic publishing equipment needs.

Standards and benchmark tests evolving from the lab will define future specifications for electronic printing output devices in federal government procurements. Hardware vendors will likely incorporate such specifications into product designs to maximize their opportunities for government sales, with obvious impact on industrywide standards.

"As the federal government's technical consultants on information systems, we attempt to help federal agencies improve their use of technology," explains Al Hankinson, chief of the Systems and Software Technology Division of the NBS Institute of Computer Sciences and Technology. "Indirectly, the Lab will help a more informed private-sector consumer in knowing what to buy and how to use what they get."

The dozens of other similar labs at the institute include those on software engineering and local-area networks.

The lab also will represent federal and private-sector interests in the formation and adoption of national and international page-description language standards. Both the American National Standards Institute and the International Standards Organization are industry-based committees formed for establishing such voluntary standards.

All announced PostScript vendors are participating in the formation of the NBS Lab by loaning their hardware products for testing and demonstration. "They are all enthusiastic to show the unique features of their product against the others," according to Bob McGough, Adobe's major accounts manager. "It is fortunate this new technology will be made more visible, since printing is almost 15 percent of the government's budget. These devices can make a significant dent in publishing costs by reducing labor for paste-up," he

New file format could smooth way for image processing

BY MICHAEL GOODWIN

MacWEEK Staff

A new file format called TIFF (Tag Image File Format) is helping PageMaker scan, crop, place and print continuous-tone photographs as part of a PageMaker document.

Created by Aldus Corp. and Microsoft Corp., along with scanner companies like Datacopy, DEST, and Hewlett-Packard, TIFF could smooth the way for image processing.

Previously, Mac Pagemaker 1.2 and PC PageMaker 1.0 have supported "dithered" images, produced by screening the photograph during the scanning process. ("Screening" converts a photograph into a mosaic of dots. "Dithering" is a compromise between a bitmap and a halftone.) This delivered good-looking results, but it had drawbacks. For one, the images would not print well unless they were a predetermined size; once the scanner produced the dithered image, enlarging or reducing the photograph more than 5 percent (to accommodate changes in the text, for instance) produced moire distortion patterns, which could ruin the image. Finally, dithered images were almost illegible on the screen, making cropping difficult.

The new gray-scale system overcomes all these problems. A photograph may be enlarged or reduced to any size; it will print well, and it will also look good on the screen, simplifying sizing and cropping decisions.

Also, if the original photograph is scanned at 100 lines-per-inch or more and printed on a high-resolution printer like a Linotronic 100, the result is an image with quality comparable to professional, stripped-in halftones.

The new file format is not copyrighted, and eventually it may be used by all image programs.

According to Steve Carlsen, Aldus' resident gray-scale specialist (and one of the principle authors of TIFF), most scanners have been capable of producing gray-scale information (that is, a rectangular array of pixels, each of which can represent one of 16 shades of gray) for some time. But because there hasn't been any software capable of using that information, the scanners have converted it internally to pure black and white.

TIFF is capable of representing several kinds of image data. One type is normal black-and-white data, another is color data, and a third is gray data. In the past, image file formats have been relatively inflexible; data was stored in a rigid, sequential pattern, and if a developer decided to change the rules by including new kinds of data, applications would crash trying to read the new image files.

TIFF provides a standard structure for storing image data that promises to maintain compatibility while still offering flexibility. "Tags" serve as pointers to different kinds of data in the file; if an application encounters a tag it cannot use, it just ignores it and moves on to the next. No crash.

"The traditional approach to image files is highly positional," explains Carlsen. "Word so-and-so within the file is always interpreted as *this*. The first word is a two-byte identifier. The next word says how many rows there are in the image. The next word says how many columns. The next word says what kind of monitor this is.

"The problem is that in adding things to the file, sometimes there is no choice but to add them between other things. If one discovers, 'Oh, there's color out there in the world. We need three times as much information.' Or if one decides to include the name and type of scanner, or what photometric density this data really represents, or this new compression technique, it totally messes up positional interpretation; nobody can read it any more. One way around this is to allocate a byte at the beginning of the file to be a format version number. But if an operator bumps the format number to 1.3, and an older application that can only read version 1.2 tries to read the file, it cannot read it and gives up, when maybe all that was added was something that application did not care about.

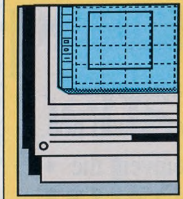
"Tags are a kind of index list that says, 'OK, tag such-and-such in this file means the image width in pixels,' and so on. An application can walk from tag to tag, and any tags it finds that it cannot understand, it skips over and goes on to the next tag. That way one can add new tags without breaking old software."

Carlsen points out that TIFF does not have any unique, magical capabilities. "An image is an image," he says, "no matter how it is stored."

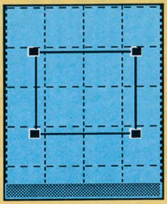
TIFF will store data coming from desktop scanners, video digitizers, even paint-type programs and VCRs, and move it easily between Macs, PCs, minicomputers, mainframes and machines not yet built. ■

HOW POSTSCRIPT WORKS

As your hand moves the mouse diagonally - with the button depressed - to produce a rectangle in MacDraw ...



... an image of the rectangle appears on the Mac screen...

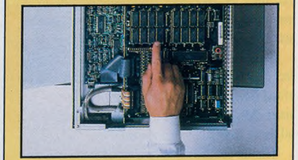


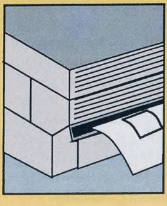
... by the way of a QuickDraw screen representation, based on vector plots.

```
gsave
%Rectangle
197.25 456.25 0
false false 0
fixcoordinates
6.5 5.5 dorec
```

Upon invoking the print command, that code is translated into a Postscript-language file, using the Mac's LaserPrep dictionary of commands..

... that is passed as an ASCII file, via AppleTalk, to the PostScript interpreter board inside the LaserWriter...





...which relays a description of the image, via a laser beam, to charge the print drum, depositing toner on the paper, where a heater melts and fuses it in place.

MacApp gives programmers head start

Mac development tool provides framework for applications

BY HOWARD KATZ
Special to MacWEEK

Despite the vaunted simplicity of its user interface, the Macintosh is notoriously difficult to program. For that reason, new Macintosh software was exceedingly slow to appear when the machine was first released in 1984.

Apple Computer Inc. says that MacApp, a new development tool that has been shipping from the Apple Programmer's & Developer's Association (APDA) since February, will make it easier for programmers to develop new applications and get their products to market more quickly.

Apple calls MacApp an application framework. It comes in the form of a nearly complete, precompiled program written in MPW Pascal that contains all the standard features of the Macintosh-user interface, such as windows, menus and scroll bars.

> "With MacApp, programmers will not have to reinvent the wheel every time they start creating a new application."

By itself, MacApp does nothing. Programmers build applications by extending what MacApp already provides, hooking their own code into the MacApp structure. By providing them with a base to start from, MacApp gives programmers a big head start.

Harvey Alcabes, MacApp product manager at Apple, says MacApp's major benefit for developers is that they will not have to reinvent the wheel every time they start a new application.

Kurt Schmucker, the author of *Object-Oriented Programming for the Macintosh*, says that since the user interface is built in, end users will benefit as well "because all programs act alike."

Schmucker points to MacDraw as the perfect example of a program that could have benefited from MacApp. "It's full of little inconsistencies," he says. "If they'd used MacApp, all those would have gone away."

Not all programs benefit. Because MacApp provides all the basic features of the user interface, programs using it have a minimum size of about 60 Kbytes, whether all those features are used or not. The larger the application, the greater the relative savings in size and programmer effort.

"It's not for small utilities," says Alcabes.

Carl Nelson, president of the independent, Everett, Wash.-based MacApp Developer's Association, says that MacApp really shines when it comes to producing "industrial-strength" applications.

"It's a big win for applications of any complexity that are going to require long-term maintenance," he says.

What makes the product particularly interesting from a programmer's viewpoint is that MacApp relies extensively on the object-oriented features that Apple has built into MPW Pascal. Developers who want to use MacApp have to learn a new set of object-oriented programming techniques, an area unfamiliar to most.

Whatever its advantages, MacApp's new way of doing things makes the product intimidating to some. "There's a learning curve," Nelson says. "You have to make a commitment."

A number of developers apparently are willing to do so. More than half of the 600 people at the developers' conference held by Apple in April turned out to hear a special panel on MacApp. Nelson says he knows of roughly a dozen third-party software vendors who have MacApp projects under development.

Dave Lingwood, executive director of the Renton, Wash.-based APDA, would not comment on current sales figures but said nearly 800 beta copies of the product were shipped prior to the official release. He also said that MacApp sales were nearly 1-to-1 with MPW Pascal.

Programmers who use other languages also are interested. Lingwood says his phones have been ringing off the hook with calls from C programmers wanting to know when they will be able to use that language with MacApp. They are out of luck. At present, MPW Pascal is the only language that provides the object-oriented extensions that MacApp requires.

That situation will change. Apple has announced it is working on MPW C++, a version of AT&T's object-oriented C language that will support MacApp. Apple will not say when the compiler will be released. Nelson says that he expects the MacApp market to really take off when C programmers become involved.

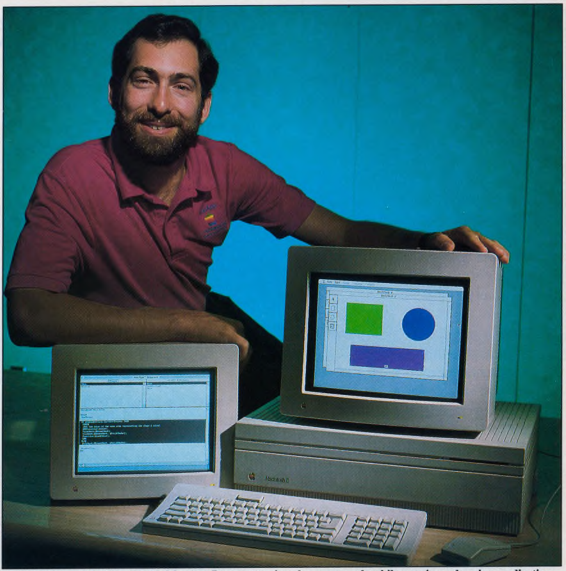
The MacApp market should see further expansion when third-party language vendors begin shipping other MacApp-compatible development environments.

TML Systems of Jacksonville, Fla.; Borland International of Scotts Valley, Calif.; and Think Technologies Inc. of Lexington, Mass., have said they are at work on extending their present Pascal compilers to support MacApp. All three companies declined to say when those products would begin shipping.

Apple's success in converting programmers to MacApp — a new way of writing applications — will ultimately depend on how useful developers perceive the product to be.

As Lingwood points out, "In the Mac environment you need all the help you can get." ■

Freelance editor and programmer Howard Katz, a resident of Burnaby, British Columbia, is the editor of the MacApp Developer's Association newsletter.



MARK JOHANN

Apple's Harvey Alcabes uses the MacApp Browser to view the source code while running a drawing application.

MacApp: A bold technical experiment

Apple's release of MacApp marks a bold technical experiment. This is the first time a computer company has promoted object-oriented programming as a major method of developing applications.

Languages that use object-oriented techniques have been around for 20 years but have never made it into the mainstream as a vehicle for producing commercial programs. The best-known example of an object-oriented language is Smalltalk, which was developed by Alan Kay at Xerox PARC in Palo Alto, Calif., during the 1970s.

The language has attracted a dedicated following. Object-oriented programming centers around a structure called the object. Objects are packages that contain both data and the code that acts on that data. In comparison, in standard procedural languages, such as C and Pascal, data and code are separate and scattered throughout a program.

Objects are used to engage the behavior of a particular entity in an application. An object representing a Macintosh window, for example, would know everything there is to know about Macintosh windows and be able to reproduce the way they behave.

Inheritance, a key concept of all object-oriented languages, allows programmers to easily modify or customize existing objects to produce new ones that behave differently. This allows programmers to reuse code and build on work that has already been done.

This language feature is important in MacApp, which provides a very generalized framework or skeleton for a Macintosh application. Programmers have to be able to customize and extend those portions of MacApp that are unique to their own program. ■—
By Howard Katz

Mail-order catalog contains educational software for Macs

SAN DIEGO — The Macintosh computer's tall standing in the educational applications market was recently highlighted by the introduction of the first educational software mail-order catalog exclusively for the Macintosh.

Chariot Software Group will distribute the catalog free to teachers, offering them programs at up to 20 percent off list price. The first issue listed 12 programs, including Microsoft Works, More, Superpaint, Ready,Set,Go!, Print Shop and classroom applications like MicroGrade. The catalog will be updated each quarter.

Chariot spokeswoman Kathy Henderson says there are 40 to 80 programs that catalogs could include. "A lot of them are now targeted at business but are very applicable to teachers, like More," says Henderson.

Programs selected for the catalog will focus on the university and high school administrative levels. According to Henderson, programming for the Macintosh has been targeted at these levels, partly because the high school lab applications have traditionally been the territory of the Apple II computer.

Henderson says she expects to see a lot more educational applications for the Macintosh because its larger memory capability allows it to hold the large databases that teachers need. "The power of these machines is making these programs more powerful," Henderson says. ■

The alternative to markers, typesetting, spray cans, knives, triangles, press type, T-squares, stat cameras, sketch pads, layout pads, tissues, kneaded erasers, proportion scales, black pencils, red pencils, blue pencils, pens, air brushes, compressors, inks, brushes, rubber cement, art board, foam board, and reams of telephone messages from studio reps.

Power users can now create with more graphics power. GraphicWorks™ 1.1 is the first fully-equipped, full-featured, second-generation graphic and text package for the Macintosh™ II, SE, Plus, and 512K.

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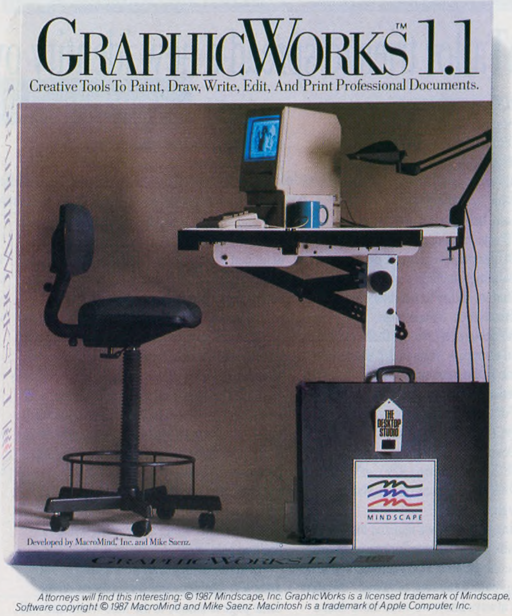
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Mac prepares to break the color barrier

BY RICHARD HALSTEAD
Special to MacWEEK

Today, the Macintosh world is still largely black and white, but as the Mac II begins to ship in greater volume and its color monitor becomes available, a number of new programs ready for release and still more under development should usher in a new age of color.

"A lot of major programs are under development right now to work in color on the Mac," says Tom Rielly, marketing manager of SuperMac Technology in Mountain View, Calif.

Lotus Development Corp. is working on Galaxy, a new version of Jazz, which will work in color on the Mac II, says Allison Parker, a spokeswoman for Lotus.

Although Lotus previewed a beta version of the product in March, the company is not saying what the final version of the software package will look like or when it will be released.

Microsoft Corp. of Redmond, Wash., previewed a color version of Excel at AppleWorld in March, but the company has not decided when, or even if, it will release the product.

In addition, Apple is sitting on a color software package of its own known as MacDraw Plus, sources close to the company say.

Rielly says many software developers are holding back until the Mac II and its 13-inch Sony color monitor are available at retail outlets.

"Many developers are working in-house and haven't released because there is no reason to yet. Very few people have Mac IIs at this point," he says.

Development of color software for the Mac is also being held up by the lack of an inexpensive means of producing hard copy in color, says Agit Kapoor, an analyst with market researcher Dataquest in San Jose, Calif.

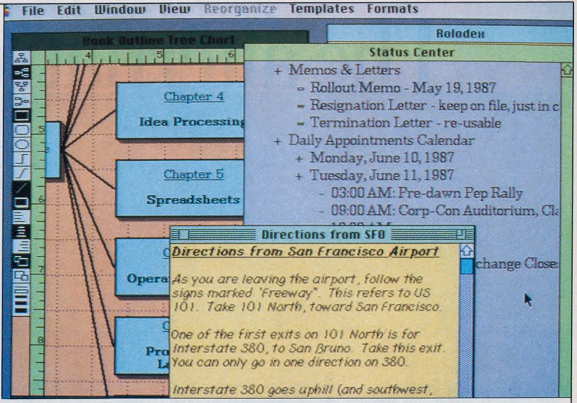
"There is really not much available in color today," Kapoor says. "It's really a Catch-22. Developers aren't willing to produce the color software until there are good printers and the printers aren't available because of the shortage of software."

The majority of color software available now is designed for computer-aided design and manufacturing (CAD/CAM) purposes, Kapoor says.

Color is particularly useful in differentiating the multilayered data output generated in the CAD/CAM environment, says Avi Lipski, president of MicroCAD/CAM Inc. in Los Angeles. Micro CAD/CAM's Micro Graphic Manufacturing Station software operates in full color and is selling now for $5,500 and up. One use for the software is by architects to design new buildings. Color allows designers to juggle electrical systems, plumbing and structural problems on the screen simultaneously.

"In our application, color is a definite boost. It makes life easy," says George Soluk, vice president of engineering for Vamp Inc. in Los Angeles. Vamp has created a color version of its printed-circuit design package called EDS System. When working in monochrome, Vamp's software cannot display as many layers of circuits on the screen as it can using color because of the human eye's limited ability to differentiate various shades of gray, Soluk says.

Still, even CAD/CAM applications are being delayed until the Mac II can reach end users. Vamp's EDS System, which will sell for $1,495, is not scheduled to ship until August. Lipski says Micro CAD/CAM will also wait 60 to 90 days to see how the Mac II sells before deciding whether to rewrite its color software to take better advantage of the computer's 68881 coprocessor.



+ Memos & Letters
  - Rollout Memo - May 19, 1987
  - Resignation Letter - keep on file, just in c
  - Termination Letter - re-usable
+ Daily Appointments Calendar
  + Monday, June 10, 1987
  + Tuesday, June 11, 1987
    - 03:00 AM: Pre-dawn Pep Rally
    - 09:00 AM: Corp-Con Auditorium, Cl

Directions from San Francisco Airport

As you are leaving the airport, follow the signs marked "Freeway". This refers to US 101. Take 101 North, toward San Francisco.

One of the first exits on 101 North is for Interstate 380, to San Bruno. Take this exit. You can only go in one direction on 380.

Interstate 380 goes uphill (and southwest,

COURTESY LIVING VIDEOTEXT

Colors, like those provided by Living Videotext's More, make the Mac II's screen come alive.

Silicon Beach Software in San Diego plans to have its Super 3-D graphics package ready by fall. The software allows users to model images in three dimensions. The 3-D images can be rotated and stored in memory to create animation effects as well, says Charles Jackson, Silicon Beach's president.

Besides CAD/CAM, the other major use for color software is desktop publishing and its corporate cousin, presentation graphics.

"To do presentation graphics, you need high-resolution color," Rielly says. "Color will open a whole new market for the Macintosh," he says.

Living Videotext has announced a color version of its presentation graphics package, More 1.1c, which will retail for $295. Likewise, Cricket Software Inc. in Philadelphia has adapted its Cricket Graph, Cricket Draw and Statworks to work in color. Users of these products may upgrade to color for $100 each.

But perhaps, Quark Inc. in Denver is the company most eager to take advantage of the Mac's new color capabilities. It has been shipping its desktop-publishing package, Quark XPress, for three months now. XPress performs special color separations. And Quark is working on an upgrade of the product that will do four-color separations.

Other announced color software for the Mac II includes BrainPower Inc.'s statistics package, StatView II, and Layered Inc.'s Insight Accounting Series.

SuperMac Technology, which sells a color-graphics board and high-resolution monitors for the Mac II, is actively promoting development of new color software, Rielly says. In fact, SuperMac has created its own software division and is looking to publish good new color programs, he says. ■

DataTailor tries to spread a new identity over its upgraded Trapeze

BY PATRICIA MANDELL
Special to MacWEEK

FORT WORTH, Texas — When is a spreadsheet not a spreadsheet?

Certainly the most dramatic enhancement to DataTailor Inc.'s Trapeze upgrade, slated for July 1 release, has to be its new identity. Trapeze 1.0 was introduced in January as a spreadsheet, despite its extensive desktop-publishing capabilities, including charting and graphing, and its ability to combine graphics, text and spreadsheets on one page.

With the debut of Version 2.0, the company has decided to bypass Version 1.1 and re-position Trapeze in the marketplace as an "integrated presentation worksheet program" to take advantage of the program's presentation capabilities, says Ellen Murphy, Data Tailor marketing director.

Trapeze 2.0, which costs $295 and is free to registered 1.0 owners, runs on the Macintosh 512e through the Mac II.

In talking to users, "we realized that people were actually using Trapeze for presentations, to integrate the graphics, the charting, and to do the desktop-publishing type of layout," Murphy says. "We always knew we were more than a spreadsheet. Marketing this product as an integrated worksheet allows us a lot more freedom because we are able to emphasize all the product can do vs. emphasizing its spreadsheet capabilities alone."

Version 2.0's long list of enhancements includes more chart options, polar, hi-lo, contour and legend; better data import/export, with WKS or Lotus format, PICT-, tab- or comma-delimited files; a revised and expanded manual; an expanded "Undo" function; and more color and pattern options.

Is the new identity just an old-wine-in-new-bottles marketing ploy to avoid competing with Excel, or is it a bold move into totally new market territory?

With one large foot in the spreadsheet world, and another foot in the desktop-publishing world, Trapeze appears to be a hybrid that may find a niche in the burgeoning "desktop-presentation" area.

Typically, desktop presentation requires several steps: importing data from one program to another and cutting and pasting within a desktop publisher.

DataTailor says Trapeze's ability to integrate text, graphics and spreadsheets on the same page is unique in the Mac world and will be much desired by the business person doing numeric calculations and wanting to chart and graph that data for presentation.

"By looking at this market, we realized we don't have to run head to head with the big guy on the block, and that we can eventually open up a market that could be much larger than just a spreadsheet market," Murphy says.

"I think it is a new market," says Michael Reddy, a New York City consultant who works with Macintosh desktop-publishing systems and who has evaluated Version 2.0. Renaming Trapeze is not a veiled attempt to avoid competing with Excel, he says, because "the program really is very different from Excel." Trapeze combines strong elements of spreadsheeting and desktop publishing capabilities with other unique qualities, such as files that stay live up to the last minute, imbedded "invisible" data bases and the "free-form" nature of its spreadsheet, Reddy says.

The fact it has imbedded databases in it that are roomy and powerful is very impressive, he says. Also, Reddy says, there are vast advantages to a free-form spreadsheet, one that is addressed in terms of blocks rather than limited to rows and columns. "You can put things in those blocks that Excel doesn't really address," and the block form saves an "enormous amount" of steps in building a formula, which is ordinarily done cell by cell. With Trapeze, it can be done all in one block, he says.

"None of this is new by itself, but all happening in one package, well, this is another story," Reddy says.

DataTailor says it is expecting a surge in sales with the market repositioning but would not disclose current sales figures or units shipped.

Despite Trapeze's strengths and unique qualities, Reddy says he believes "they do have a marketing problem." Because the program was introduced as a spreadsheet, reviewers had no choice but to compare it to Excel. Trapeze received several favorable reviews, but one reviewer admitted that comparing it with Excel was like comparing "elephants and zebras."

"It's a market that will take some educating," Reddy says. "People are going to have to learn that there's something that can do this. I think they're right to change the name; it's not a spreadsheet. What they've done is very intelligent. It's a hard thing to describe. What I would call it is a free-form spreadsheet that has strong charting, page layout and presentation capabilities." ■

Software support: Now you get only what you pay for

BY MICHAEL ALEXANDER
Special to MacWEEK

SAN FRANCISCO — A recent problem with a Microsoft program provided a San Francisco aerospace engineer with an introduction to the not-always-supportive world of technical support.

The engineer said he found himself bounced back and forth between the MacWorld exhibits of Microsoft and Apple as each laid the problem at the other's door. Fortunately, the exhibits were directly across the aisle from each other.

Unfortunately, said the engineer, neither was able to help him. Like any good office hacker, he finally solved the problem himself.

But he discovered what many software users are finding: The era of free-and-forever customer support may be ending.

Some of the largest microcomputer software companies have been asking their customers to pay for technical support most thought they had paid for when they bought the program.

As customer-support policies change, large buyers of software are asking important questions: How much training, advice and correction of program bugs are part of the software purchase price? Should dealers or vendors provide support? What kinds of advanced help are needed, and what should they cost? Should support go to a company's software center or directly to its end users?

An informal MacWeek survey showed a wide variation in support levels, quality and satisfaction among large customers.

What we found:

There are no differences between support for Macintosh and IBM.

Large customers still use dealers for training but look to publishers for technical support. Publishers are assigning more senior technical specialists to large customers and directing support to their central information staffs instead of to end users.

Most large customers will pay for advanced training, but think technical support is part of the software price. Publishers search for the right mix of features and prices when designing paid-service contracts. Except for contracts, few still offer toll-free telephone lines. They use more newsletters, technical notes and electronic bulletin boards to spread technical information and encourage users to help themselves or other users.

"Customer support is beginning to be a real issue" for large software buyers, says Rebecca Segal, director of customer service programs at International Data Corp. in Framingham, Mass. Currently, most corporations get support from the dealers who supply their software, "and dealers are part of the problem. Software support is more difficult to deliver than hardware service," she says. Regional support is adequate, but no dealer can handle a large company with nationwide offices.

Apple's policy has been to refer customers to dealers for support, leading many customers to complain they could not get answers from

See SUPPORT, Page 14

Support needs may increase with open-architecture Macs

Almost all software and hardware has worked harmoniously on the Macintosh 512s and Mac Pluses, an underappreciated advantage of their closed architecture.

In contrast, Colleen Byrum, manager of customer service at Aldus Corp., says, "The number of hardware combinations for the (open-architecture) IBM environment is astronomical. Calls are longer, and installation is harder."

Now that the Mac SE and Mac II boxes are open, expect some compatibility to be lost. Will it become as much of a problem as with IBM? Probably not, because Apple has tight compatibility standards for software developers and will not help those who ignore the Macintosh interface.

Training

Although the Mac is easier to learn and use than other computers, more sophisticated programs and those that demand user creativity, such as page layouts, modeling, even spreadsheet and database design, increase the need for training.

Companies are buying desktop-publishing packages and literally asking secretaries to produce the annual report by next Thursday. To meet the demand for support, Aldus is developing an ambitious training program. It markets a PageMaker Classroom materials package, runs on-site classes for corporate trainers and plans authorized training centers or dealer training classes by next year.

Bugs

International Data Corp.'s Rebecca Segal says corporations are "willing to pay for training but not for software manufacturers' mistakes or errors."

Ashton-Tate's Jay Hansen notes that bugs are a software fact of life. How are they fixed? "We play it case by case," he says. Serious bugs rate a free or at-cost update. If a bug is one that "few users will encounter," those who call are given a free workaround.

But Odesta Corp.'s President Daniel Cheifetz says that some companies "still release what are really beta versions (of programs) and then ask customers to pay again for copies that work."

Documentation

Publishers complain that users call for help instead of reading the manual. Users respond it is because the manuals are often unreadable.

Warren Geller, a manager at a California aerospace company, laments that "if they would put out good documentation, I wouldn't need any support." He likes Borland International's relational database, Reflex, but says he suspects that "the manual must have been written in a different country."

Louise Stanley, director of Borland's Macintosh marketing, says the manual is being completely rewritten.

Manuals often are better at describing how a program's tools work than at demonstrating what you can do with the program.

Geller says that to unlock the power of Microsoft Excel, "I bought three, no, *four* books. I couldn't write macros until I saw Danny Goodman's *Hands-On Excel.* Now we write very complex macros." ■ — *By Michael Alexander*

CUSTOMER SUPPORT SERVICES FROM SOFTWARE PUBLISHERS

Publisher	Toll Free Number	Phone Hours	No Charge for Help	No Time Limit	Service Contract	Larger-user Specialists	Product Specialists	Bulletin Board	News-Letters	Tech-Bulletins	Support/ Company Size
Adobe		8-5 PDT	✓	✓	(1)			✓	✓		8/100
Aldus Individual		7-6 PDT	✓	15 Days (2)	✓			✓	✓	✓	18/200
Aldus Corporate	✓	7-6 PDT	$1,000	1 Year	✓	✓		✓	✓	✓	18/200
Ashton-Tate Indiv.		6-4:30 PDT	✓	1 Year	✓	✓	✓	✓	✓	✓	N/A
Ash-Tate Corp.	✓	6-4:30 PDT	$450-3,000	1 Year	✓	✓	✓	✓	✓	✓	N/A
Borland	✓	8-5 PDT	✓	✓				✓			40/300
Forethought	(3)	8-5 PDT	✓	✓							4/25
IDD		8-5 PDT	✓	✓							3/27
Living Videotext		9-5 PDT	✓	✓				✓			4/30
Lotus		8:30-8 EDT	✓								N/A
Lotus PROMPT	✓	8:30-8 EDT	$150	1 Year	✓	✓		✓		✓	N/A
Microsoft		6-6 PDT	✓	✓			✓	✓	✓		N/A
Odesta		8-6 CDT	✓	✓	(4)	✓			✓	✓	N/A
WordPerfect	✓	7-6:30 MDT	✓	✓		✓		✓			140/400

(1) Illustrator
(2) Begining with first call
(3) Phasing out
(4) Training

SUPPORT

Continued from Page 13

either and to hope that Apple's new software subsidiary will do better. But when the dealer training contract expires or the software itself is buggy, users look to publishers for help. Apple did not return calls on the subject.

WordPerfect Corp. of Orem, Utah, is a software publisher with a user-friendly reputation. Dan Lunt, WordPerfect's vice president of marketing, says 140 of his company's 400 employees do customer service.

WordPerfect's policy of free support forever was the most generous of the companies surveyed for this article *(See chart on previous page)*.

A WordPerfect customer with 100 or more packages gets a direct line to a senior support person. According to a survey by Aldus Corp., large corporations want dedicated account support executives to work with the customers' in-house support groups.

Although International Data's Segal says good support begins with good software, "good" need not mean "big."

A call to tiny Forethought Inc. in Sunnyvale, Calif., which makes FileMaker Plus and PowerPoint, may be answered by its president. "Almost everybody spends one day a month working the phones," says Bob McMahon, customer support manager.

Specialization works. Since Microsoft Corp. started routing all callers directly to program specialists, customer wait time and complaints have dropped because long, technical questions only have to be asked once. Vernon Keenan, a database programmer at Genentech Inc. in South San Francisco, Calif., confirms that Microsoft's people "are more knowledgeable now."

To provide fresher information, Microsoft just started newsletters for Mac and DOS program users. Adobe Systems, maker of the scanned drawing program, Illustrator, produces a handsome quarterly publication called *Colophon*, which reproduces users' artwork and describes how it was created. On request, Living Videotext sends answer sheets to customers' 20 most-asked questions. Odesta, publisher of the Helix database, just finished its first training videotape.

Cost of support

Most customers expect some support and training when they buy a program: a tutorial, a self-running demonstration tape, free help with installation. Kathleen Humphrey, who designed Aldus' corporate support program, says most companies are willing to pay "a price compatible with the cost of the software for locally available, good-quality advanced training. Corporations understand that good support costs, but they don't want to feel they're being gouged. Support can be a cash cow for computer vendors."

Even customers who buy training packages resent paying for technical support, which they believe should be part of the product price and the publisher's obligation.

WordPerfect's Lunt agrees. "It's crazy that some charge for support or that they feel they have to charge for it. There is more than enough margin to fully staff a support group and give the customer the answers he needs."

Adobe Systems' new customer-support manager, Ellen Nold, says, "Everyone is struggling with the problem. The cost of phone support is astronomical."

To counter the horde of individual calls, she says she wants to "train the corporate support people and give them a hot line, regular mail, yearly visits, regional support coordinators, advance looks at new products, more use of databases and on-line services. Everything to help users find their own answers."

In the past year, Ashton-Tate and Lotus Development Corp. have offered paid support with mixed results. Customers who do not want to get busy signals or spend six minutes on hold on a long distance call to get help at no charge can buy Lotus' premium PROMPT service for $150 a year. It offers toll-free, no-wait access to senior support experts, a guide listing the 100 most commonly asked questions, 40-page quarterly technical newsletters and new product information and demonstrations.

Ashton-Tate has changed its 9-month-old services-and-support program in an effort to attract new corporations. Its previous program cost $4,000 a year and allowed unlimited calls to special toll-free numbers.

Ashton-Tate now has two entry-level plans, with extra services available at added cost.

The entry-level Technical Support I costs $450 a year and allows unlimited access to Ashton-Tate's toll-free Express Queue help lines. Only two calls can be made at once.

Technical Support II, the second level, is $935 a year and in addition to the Level I features offers monthly calls from an assigned Ashton-Tate representative. ■

Starting August

to have great ideas.

Just infinitely eas

Ever since paper replaced cave walls as man's favorite vehicle for expression, the attempt to communicate ideas has been an enduring source of frustration.

That frustration has just been eased dramatically.

Letraset introduces Ready, Set, Go! 3.1—an enhanced version of what InfoWorld called "the new champion among Macintosh desktop publishing programs."

To put it simply, Ready, Set, Go! 3.1 is the easiest, fastest, most creative way yet devised of helping you organize, visualize and edit your thoughts onto professional-quality pages.

In fact, it removes any meaningful distinction between what you can do at your desk and what might otherwise require large budgets, long lead times and a studio full of designers.

The technically inclined will be pleased to note that it has a

THE LONG VIEW

Lawrence Magid

I intended to write a different column for this week, but a white delivery van from Cupertino, Calif., changed my plans. It pulled up last week with one of the first Mac IIs off the assembly line. I had heard great things about the machines and even had a chance to play with a preproduction unit at Apple, but living and working with a system is a lot different than eyeing its specifications.

Of course, I am impressed with the speed and performance. It is incredible how quickly it launches, runs and quits from programs. However, the fact that programs run faster does not actually mean you get that much more work done. Unless you are running processor-intensive programs, most of your time is spent typing, reading or printing — the Mac II does those at about the same speed as earlier machines. Nevertheless, there is the psychological advantage of not having to wait a few extra seconds every time you want to do something. Some applications, like large spreadsheets, computer-aided design and desktop publishing take real advantage of the extra speed.

There are a few programs that do not run on the Mac II, but that does not bother me. Innovation always breeds disruptions, and if those necessary changes cause some inconvenience, that is the price of progress. Perhaps I'm lucky. The staples of my software collection — Microsoft Word 3.0, Excel, Microphone, PageMaker 2.0 and MacDraw — all work fine. Major programs that do not run, as of now, include MacWrite and Microsoft Works. Revised versions of both programs will be available soon.

There are two things that bother me about the new machine. The fan is noisy and Apple's monochrome display is disappointing.

When the Mac II was first announced, I commented that Apple has finally developed an industrial-strength computer. I did not realize, at the time, how apt that analogy was. When I sit in front of the Mac II, I feel like I am operating a big, noisy machine. I did not bring out a meter, but the fan makes a lot of noise. I mitigated the problem to a certain extent by placing the system unit under, rather than on, my desk. The desk acts as a muffler, softening the noise before it reaches my ears.

To be fair, I am using the machine in an exceptionally quiet environment. In a busy office, where the vast majority of the machines will be placed, the ambient noise level is higher and people are less likely to notice the sounds of any specific piece of equipment.

I have learned to live with the fan, but I have not gotten used to Apple's monochrome display. It is not nearly as crisp and readable as the 9-inch display built into the earlier Macs and the SE. After several hours, I began to get eyestrain. Just to make sure I did not have a defective unit, I had Apple swap out my display. The replacement is just as bad.

I do not have a technical explanation, but the characters generated by the Mac Plus and SE are much darker and, therefore, easier to read. It is especially evident when the two machines are side by side.

As a writer who spends several hours a day staring into a monitor, I find this to be a serious problem. Speed and flexibility are great, but they are not as important as preserving eyesight. As much as I love the Mac II, I sometimes find myself turning to the Mac Plus for my writing because of the better display.

As it turns out, Apple did me a big favor by sending me a screen that is less than optimal. The eyestrain from using the monitor prompted me to visit an optometrist.

Now that I have new glasses, I can actually read what is on the screen. OK, part of the problem was my eyesight, but I had several other people look at the screens and almost all agreed that the Plus and SE screens display darker and, therefore, more readable characters.

Ironically, living with the Mac II for the past week has given me a greater appreciation for the Mac's original design. I am not trying to stifle progress — I really do appreciate the extra speed, open slots and larger display, but I also realize how much I have come to appreciate the older Mac's compact design, crisp display and quiet operation. Ditto for the SE except that its fan is rather noisy, too.

Having said that, I must admit that speed is addictive. The Mac II is the power user's Mac and I am hooked. My optometrist helped minimize the screen problem. Now all I need is a good pair of ear muffs. ■

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NUMBER CRUNCHING

JOHN HERSEY

Mac Spreadsheet Market Offers Several Alternatives

Just updated to work with the new Macs, Excel continues to dominate the spreadsheet market. But for users with more modest number-crunching needs, there are several capable competitors.

The lack of a full-powered spreadsheet was one of several factors that kept the Macintosh out of the business market in its early years. Microsoft's Multiplan was, and remains, a serviceable program, but it has none of the power and flexibility that Lotus 1-2-3 has brought to the MS-DOS world.

Excel changed all that. Introduced by Microsoft in 1985, it instantly became a standard among Mac users. To the doubters it proved that the Mac was not a toy after all, that the 68000 chip and Apple's technology could hold their own against anything the competition had to offer.

Excel continues to dominate the market, but other effective and economical options now exist. This week MacWEEK looks at Excel 1.04 and several capable competitors: MacCalc, MacPlan and Microsoft Works.

Excel 1.04 ☆☆☆☆

Microsoft Corp.
16011 NE 36th Way, Box 9701, Redmond, Wash. 98073; (800) 426-9400
$218 (street price); **$395** (list price)
Not copy protected.

Excel is the undisputed leader among Macintosh spreadsheets and probably the most powerful program of its kind for any personal computer. The latest update makes the program Mac II-compatible but adds no major new features.

If your number-crunching needs have outgrown Excel, then you may have outgrown microcomputers. Nearly two years after its release, Microsoft's integrated business program still reigns as king of the spreadsheet world — the most powerful and elegant program of its kind for any personal computer.

Excel probably accounts for more Macintosh sales to business people than any other software, with the possible exception of PageMaker. Most users do not need all of Excel's features; one of the less expensive spreadsheets would do nicely. But like Lotus 1-2-3 for MS-DOS machines, Excel has become the standard for the Macintosh.

Features

Excel includes spreadsheet, database and charting features, but its reputation is based almost entirely on its spreadsheet. Foremost among its features are the capacity to open and link multiple spreadsheets, powerful macros and the considerable control provided

Continued on next page

over the appearance of printed copy.

Version 1.00 of Excel was an excellent piece of programming, with surprisingly few bugs for such a complex program. Versions 1.03 and 1.04 were released more to adjust for changes in Mac hardware and the operating system than to address flaws in the program.

Version 1.03 removed copy protection. It also gave Excel the ability to find external references when under the hierarchical file system. The most important addition was the ability for Excel to recognize and make use of a 68881 floating-point coprocessor. For heavy number crunching, the coprocessor allows Excel to perform calculations much faster.

Besides Mac II compatiblity, Version 1.04 has only two changes. The "Links" command has been changed to "Open Links" to permit easy re-establishment of links between worksheets that have been moved to a different folder or renamed under the Finder. The new release also adapts Excel for use on a network. A "Read Only" box added to the "Open" dialog box permits more than one person to open a single Excel document. If a user checks the box and edits a document, it must be saved with a new name. If someone opens a document without the Read Only box checked, then no one else on the network can open the document until it is closed by the first user.

Several programs include macro-writing abilities, but Excel has its own macro programming language and a recorder to speed up the writing of macros. The program supports two types of macros: command and function. Command macros are sets of user-determined instructions that can be performed by giving a single command. They can be as simple as formatting a selected range of cells or as complex as preparing and printing a monthly report complete with charts. Macros can be interactive, pausing to allow the user to make choices or enter data.

A function macro is an operator that when applied to a value, produces a new value. In effect, it is a formula-building shortcut. A list of more than 90 functions are built into Excel. These can be entered into any formula by clicking on the name in the "Paste Function…" list or typing the name into the Formula Bar. Power users can go even further by defining additional custom functions of their own.

"Linking" allows the user to define relationships between different parts of a spreadsheet or between different worksheets. When any data is altered, then all data with a defined relationship, even on other worksheets, are instantly updated.With multiple windows on the screen, linking lets the user edit information in a database window, for example, and see the effect immediately in a data summary window and a chart window.

Window management in Excel has become a model for other programs. Numerous windows can be open at the same time, and a window menu allows rapid shifting among them even when large numbers of documents are open at one time. These windows can be any combination of worksheets, charts or macros. Each worksheet can be further split into two or four "panes." This feature allows one to get distant parts of the same large worksheet on the screen at the same time.

Windows can be zoomed by double clicking on the Title Bar or, in version 1.04, on the Zoom Box. More interesting is the miniature window display called "Preview." Accessed through the "Print" menu, it allows one to assess how the worksheet will be proportioned on the page or split between pages when printed. Clicking on the magnifying glass icon provided in this mode allows precise inspection of where page breaks will occur.

Few microcomputer applications share data with other applications as well as Excel. Documents are automatically imported from Microsoft Chart or Multiplan and also from File or Word when saved as text. Excel also will automatically open files transferred from Lotus 1–2–3 and ASCII text format.

Excel is equally versatile in exporting files. It can save them in four formats: its own, SYLK (for Multiplan and many databases), .WKS (for Lotus 1-2-3), and ASCII text. With Multiplan and Lotus 1-2-3, the formulas, values and text can be shared, but Multiplan cannot read Excel's macros and Lotus 1–2–3 cannot read Excel's charts or macros.

The Excel program disk includes the latest version of Switcher, and the program manual includes a pamphlet on using Excel with Switcher. Also on the program disk is an icon that will automatically install a "Switcher Set" for Word with Excel. Because the contents of the Clipboard can be carried between applications, Switcher provides a convenient and almost instant means of data transfer.

Information in Excel can be protected from tampering or accidental change. This is especially useful in multi-user and network situations. Formulas and data also can be hidden. "Protect Document…" is used to protect an entire document from change. If some cells need to be left unprotected for data entry, for instance, then the command "Cell Protection…" is used for selected cells before using the "Protect Document…" command. The "Cell Protection…" command has a second box that allows formulas to be hidden. The values will still be computed and appear. To hide data (values), they must be in a column separate from any information that one wishes visible, and the column width must be set to zero before using "Protect Document…"

With Excel there is no need to limit the worksheet's appearance to a standard row-by-column grid. Elaborate formatting control is included within the program. Gridlines can be turned off, and borders or partial borders can be placed around blocks of cells. The font and font size for the entire worksheet can be changed, but only for the whole spreadsheet. Even the latest version does not allow different fonts or sizes in different cells. Row height is not adjustable either, except by changing font size.

Performance

No one complains that Excel is too slow, too small or too short on features. Users are more likely to run into hardware limitations before the software fails them.

Speed is more a function of hardware than software for number crunching on the Mac. Most calculations are performed instantly, but for power users, any combination of more internal memory, a hard disk, a math coprocessor and an accelerator card helps dramatically.

For business graphics or database functions, it is easy to find a cheaper, superior program, but for most tasks Excel's modules are adequate. The chart functions are an abbreviated version of Microsoft Chart but with a more elegant user interface. There are two advantages to having graphics capabilities built into Excel: Graphics are instantly available for charting the results of calculations, and the program will update itself whenever the data is changed.

Ease of use

Excel's extensive list of features overwhelms some beginners. Even the "Help" menu is intimidatingly large. If one has a mathematical background or has used a spreadsheet before, Excel can be easily picked up, but for most new users it is not easy. As the user gains experience with the program and begins to use a wider range of features, there will be constant surprises at how well things have been thought out and how many short cuts are available. One example is the "Resume Excel" icon that appears on the Mac desktop alongside the main program icon. A double-click on it reopens Excel with exactly the same windows displayed as when the user last quit the program.

Documentation

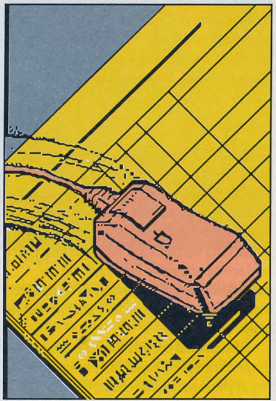
As might be expected, the manual for Excel is one of the largest for any Macintosh software. The basic manual is a three-ring binder of more than 360 pages. There is a supplemental manual of more than 200 pages discussing "Arrays, Functions and Macros." Even the "Quick Reference Guide" is 20 pages.

For users with limited math backgrounds, this massive amount of instruction still seems insufficient, especially the examples. The 60-page "Learning Excel" section does work. Most people will be able to make some use of the program after one session with the tutorial, but how fast one progresses depends on determination and prior spreadsheet experience.

The truth is, no matter how exhaustive the manual, some people will need additional help. The number of third-party products available to help the user gain familiarity and skill with Excel is more a reflection on the complexity of the subject than any shortcomings of the manual. There are audio cassettes combined with disks (similar to Apple's "Guided Tour of Macintosh") full of examples, hints, templates and macros. A monthly newsletter of tips for business users of Excel and several excellent books are available. Templates designed for tax preparation, accounting, real estate investment analysis and other specialized purposes are virtually full applications.

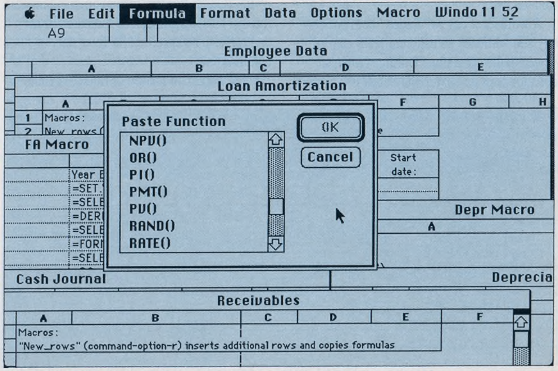
Support

Microsoft offers telephone technical support (not toll-free), but the best Excel support is found in the Macintosh community. The program's popularity makes it easy to find users who can offer advice. The dealers who sell the program will certainly be able to provide some help. Local user groups can give immediate assistance. They can usually suggest someone to give lessons or set up a template. There is also the commercial and shareware products and publications on Excel. All of this adds up to the most complete support available for any program on the Mac.


LAX JANSEN

Summary

The lack of significant updates to Excel is in part testimony to the quality of the product initially released, but also due to the lack of challenge to its supremacy. This does not mean Excel programmers have been idle. There is a rumor circulating that there may be a significant update released this fall in response to the challengers due out this summer. *— By Scott Beamer*



Macros:
"New_rows" (command-option-r) inserts additional rows and copies formulas

With macros, a rich selection of mathematical and financial functions, and the ability to open multiple worksheets, Excel contiues to dominate the Macintosh market.

MacCalc

Bravo Technolgies Inc. c/o DPAS ☆ ☆ ☆
P.O. Box T, Gilroy, Calif. 95021
$100 (street price); **$139** (list price)
Not copy protected.
MacCalc offers high performance for a low price. It allows attaching notes to any cell but lacks macros and integrated charting.

MacCalc combines good performance, modest price and some unique features into a spreadsheet package of exceptional value. The progam's developers, Bravo Technologies, kept the price down and the interface clean by omitting some of the functions offered by more expensive competitors. But for the large number of spreadsheet users who do not need these missing features, MacCalc makes an excellent choice.

Features

MacCalc's designers defied the logic that says the best program is the one with the largest capacity and the most features packed in. They limited the work area to 125 columns by 999 rows and included far fewer numerical formats and mathematical functions than Excel (and no user-definable functions). On the assumption that only a minority of spreadsheet users actually use macros, they left this popular option out.

They also did not give the program any integrated graphing capabilities — not because few applications require charts, but because independent packages like Cricket Graph or Microsoft Chart can do the job better.

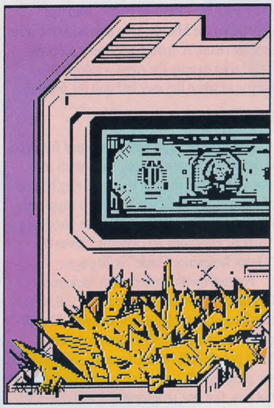
Attempting to meet the requirements of the most demanding spreadsheet users, the designers of Microsoft Excel packed in features that many others do not need. Bravo adopted a different course, concentrating on making MacCalc work smoothly and efficiently for users with more limited applications.

A number of commands make it easy to navigate around the spreadsheet. Tables can be searched on either text or numerics. Individual cells or ranges can be named and then reached by selecting directly from the "Names" menu. (In Version 1.2 a new Reset command, as part of the Names menu, allows a name to be redefined without deleting it from the list).

A worksheet can be "folded" both horizontally and vertically so different areas can be viewed at the same time. During scrolls, an indicator pops up next to the Scroll Bar to show the cell location. The user can even increase the "resolution" and, thus, the utility of MacCalc's horizontal and vertical Scroll Bars by setting them to scroll only through that portion of the spreadsheet actually in use.

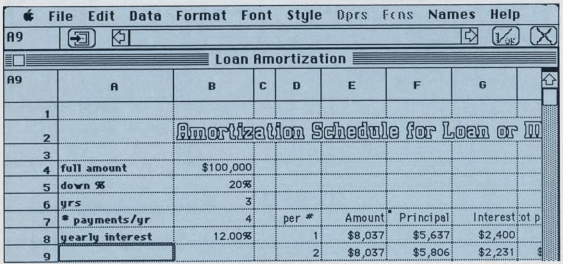
MacCalc makes it easy not only to locate, but also to work with data. Operators and functions are directly accessible from menus — no dialog boxes required!

The program automatically supplies closing parentheses in formulas. Blocks can be moved, and tables can be sorted (the sort is even "undoable," thanks to MacCalc's "industrial-strength " "Undo" and "Redo" functions). "Paste Multiple" and "Move" commands provide efficient ways to design and manipulate the model. Tables can be automatically filled with constants or incrementing values. Selecting the "Lock Document" command makes entering a password necessary before the spreadsheet can be opened.



Other carefully thought-out features help the user generate stylish printouts without going to a page-layout program or a word processor for finishing touches. Cell height as well as width can be varied and different fonts and font sizes can be used in each cell. (Excel still permits only one font and one cell height in a worksheet.) MacCalc's current version also allows borders around cells and groups of cells — the "Quick Border" menu command makes it easy. The cell grid can be turned on or off and can also be specified for rows only or columns only.

One important feature of MacCalc is the ability to attach a note to any cell. Each cell that has a note shows a little square in its upper left corner. Double-clicking on a cell allows the user to read the associated pop-up note or to add one. Notes are great for keeping track of assumptions and explaining the worksheet and formula structure. MacCalc also allows appending brief comments to a formula.



A9	A	B	C	D	E	F	G
1							
2		Amortization Schedule for Loan or M					
3							
4	full amount	$100,000					
5	down %	20%					
6	yrs	3					
7	* payments/yr	4		per #	Amount	Principal	Interest
8	yearly interest	12.00%		1	$8,037	$5,637	$2,400
9				2	$8,037	$5,806	$2,231

An outstanding feature of MacCalc is its ability to handle a variety of fonts and cell heights within a single worksheet. (Black dot in cell F7 indicates the presence of a note.

Menus that are too tall to fit on the screen have handy little arrowhead marks on the top and/or bottom of the menu to indicate in which direction(s) more menu entries may be found. (Apple has added a similar routine in the latest version of the System software, but MacCalc had it first.)

It all adds up to a very capable spreadsheet. It would be even more powerful and efficient if it could open multiple worksheets. This is becoming an even more important issue with bigger screens. (MacCalc does work on large-screen displays).

Similarly, the worksheet is a little too narrow, even with the program's philosophy and marketing strategy in mind. It is possible to challenge the 125-column limitation without much effort, even for moderately sized worksheets. Many users just naturally design horizontally oriented models. MacCalc needs to be a little wider, perhaps 256 columns.

Performance

On the average, MacCalc recalculates faster than Excel. Below are the results of a comparison test using a medium-size file (36 rows by 120 columns) on a Mac Plus and an Apple HD20SC with Finder 5.5 and System 4.1:

Operation	Excel	MacCalc
Launch program	12 sec.	13 sec.
Load spreadsheet	25 sec.	24 sec.
Recalc spreadsheet	10 sec.	6 sec.

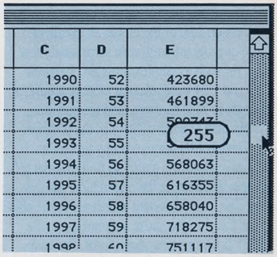
Spreadsheets from other programs that have been saved in Lotus'.WKS format are converted by MacCalc easily. The file used above, for example, came from Excel in this format. MacCalc converted it without problems, and in only a few seconds.

Version 1.2 is quite stable — we have encountered no substantial bugs — but it does suffer from some small but annoying performance problems.

- The program maintains two internal Clipboards, one for cells and another for the entry bar. Unfortunately, the Clipboards are set up so that a conventional "cut and paste" directly from one cell to another does not work.
- The cell protection and global protection switch combinations interact in ways almost impossible to decipher.
- Not all fonts installed in the System can be accessed by MacCalc, even when they are installed by Apple's Font Mover.
- A "folded" worksheet that is closed will then open unfolded. MacCalc should preserve any folds through "close/open" and "quit/launch" cycles.

Ease of Use

Popular as Microsoft's Excel is, casual and even some frequent users find aspects of it uncomfortable: Some types of graphs are impossible to construct; the dialog boxes are too numerous and too complex; the logic behind the menus is obscure; and the macro language can be arcane.



C	D	E
1990	52	423680
1991	53	461899
1992	54	[illegible]
1993	55	[illegible]
1994	56	568063
1995	57	616355
1996	58	658040
1997	59	718275
1998	60	751117

MacCalc automatically fills blocks with incrementing values. A position indicator pops up to dislplay the current row number as you scroll through the worksheet.

That is exactly the opening that Bravo attempted to exploit with MacCalc. By ignoring what they say is a 20 percent or 30 percent segment of the spreadsheet market, the program's designers gained the freedom to concentrate on polishing up MacCalc's user interface. The result is a product that answers the frustrations of Excel users — its carefully planned command structure makes MacCalc exceptionally easy to use. New users quickly become comfortable with the program.

Documentation

The MacCalc manual is a brief but complete 140 pages plus index. A few items could use a little expansion, but mainly the manual is well-written and sufficient. Screen dumps liberally illustrate the text. On-line help (through a dedicated "Help" menu) also is good.

Support

Bravo's support policies rate a "very good" The telephone support line is not toll free and is often busy, but the staffers handling calls obviously know the program intimately and are glad to discuss its limits as well as its procedures. Bug fixes are free, but product enhancements cost money: Version 1.1 was shipped without charge to all registered users, but an upgrade to Version 1.2 costs $30.

Summary

Do not buy MacCalc if you need more than 125 by 999 cells. Do not buy MacCalc if you really need an integrated macro capability. Do not buy MacCalc if you must have integrated graphing or any of the specialized formats and functions the program does not support. But consider MacCalc if you can use a spreadsheet with "speed, style and simplicity" that is highly capable and inexpensive as well.

Is there room for another, different style of spreadsheet for the Macintosh? Excel has a large installed base. It will be tough for MacCalc to compete, but the product makes a lot of sense for a large part of the spreadsheet market. — *By Joe Kroeger*

Joe Kroeger is an editor of The Diskette Gazette *and editor of* The FileMaker Report. *The* Gazette *is a newsletter about 3.5-inch disks and is available free by writing to:* The Diskette Gazette, *2278 Trade Zone Blvd., San Jose, Calif. 95131.*

MacPlan/Sidekick 2.0

Borland International ☆ ☆
4585 Scotts Valley Drive, Scotts Valley, Calif. 95066
(800) 255-8008
$59 (street price); **$99.95** (list price)
Upgrades **$34.95** to registered owners
Not copy protected.
MacPlan is an effective spreadsheet for simple on-the-fly calculations and business graphs. As a Desk Accessory, it is limited in capacity. Its scrolling is slow and the documentation is incomplete.

PAUL MORRELL

Microsoft Excel continues to dominate the Macintosh spreadsheet market, but MacCalc, MacPlan/Sidekick andMicrosoft Works are viable alternatives.

With the release of Version 2.0 of Sidekick, Borland International has added a compact but effective spreadsheet to an already popular collection of Desk Accessories. The new module, formerly marketed by T/Maker as Click-On Worksheet, is now called MacPlan.

Features

MacPlan's major strength is not a comprehensive features list, but ready availability (via the Apple menu) from within any application. At 40 Kbytes, this spreadsheet in Desk Accessory form accomplishes a lot with a little.

With stringent limits on capacity and features, MacPlan is clearly not the program for financial power users. At 20 columns and 50 rows, the spreadsheet (called the "worksheet" by Borland) is truly puny in comparison to spreadsheet application programs. Macros, the lifeblood of many a spreadsheet jockey, are missing entirely. And while the selection of math and business functions includes the essentials, it is, nevertheless, skeletal.

But MacPlan is not intended to replace Excel, and to reject the product because of these limitations would be to misunderstand its intended purpose. MacPlan is meant to deal with simple problems on the fly while other applications are active. For this purpose, it makes a good, reliable alternative to the complexities and memory requirements of running a full-scale spreadsheet program under Switcher.

In spite of its unsophisticated nature, MacPlan shows some flexibility when it comes to displaying the worksheet on the screen. To display rows or columns from different parts of the worksheet side by side, MacPlan uses a simple "folded page" metaphor: The user simply drags a row or column across the screen, as if folding a physical page, until it is adjacent to any other row or column desired. The worksheet can be folded in either direction as many times as necessary, and a single click unfolds the page.

Included in the abbreviated list of functions are most functions non-technical users will need: simple math routines that add cells and calculate averages, standard deviations and logarithms, several important financial and depreciation functions, and a few miscellaneous logical and date functions. Notably missing are variance, square root and trigonometric functions, and the logical operators "and" and "or."

MacPlan's quick-and-dirty business-style graphing functions alone will be enough to sell some users on the program. If a chart is called for to illustrate a quick MacWrite letter on sales trends, the user has simply to open MacPlan and type in the values under discussion. In a second or two, the program transforms that data into a standard line, pie or bar chart. Stacked and comparative bar chart formats are available.

Again, limitations are easy to find. For example, titles and other text can only be edited as worksheet cells, not on the graph itself, and the program allows no user control over the position of the text or graphics. These will be minor quibbles, however, for people who do not want to bother with loading a full-scale business graphics application.

Users who wonder what they can do within MacPlan's constraints will get some ideas from a series of templates Borland has included. These handle useful computations such as depreciation, lease vs. buy decisions, loan amortization, and home and business budgets.

MacPlan can interact with other Desk Accessories, including SideKick's own Notepad+ text editor and its new outliner, Outlook. For the most part, this "integration" is garden variety "cut and paste" to the Clipboard. It is worth noting, however, that MacPlan graphics can be attached to specific points in Outlook outlines. Since Outlook can create the tab-delimited text files preferred by spreadsheet programs, the labels for an entire worksheet can be typed in and transferred en masse.

The fact that MacPlan itself creates tab-delimited files may make it handy for simple information management chores, an application not mentioned in the manual. As legions of Lotus 1-2-3 users will attest, a spreadsheet's row/column table format is a crude but effective way to enter and view information of any kind, even when calculations are not required. While MacPlan lacks even the most primitive database management features, its files can be easily exported to a database program for sorting and searching.

One important feature that is entirely lacking in MacPlan is the ability to print out its worksheets or graphics. Users can work around this limitation by pasting MacPlan data or charts into an application program or another Desk Accessory, but this is an annoying inconvenience — even for users who would otherwise be content with the program's features.

Performance

MacPlan performs recalculation only at the user's request, and it always recalculates the entire spreadsheet. Recalculation speed is sluggish but acceptable given the limited maximum worksheet size. Performance would be better if the program had the ability to recalculate only a range of cells.

MacPlan's most irksome feature is its jerky and painfully slow scrolling, particularly when there is any data in the worksheet. Unfortunately, there is no provision for jumping directly to a particular cell to minimize the need to scroll.

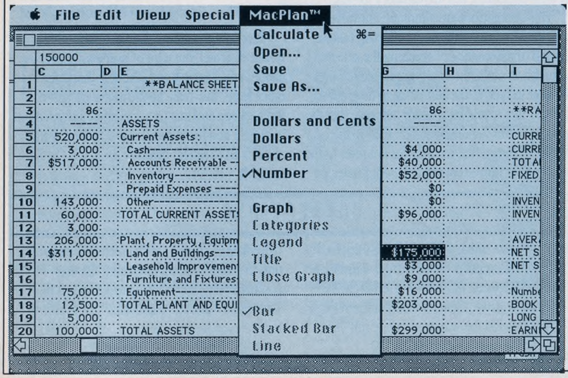
While MacPlan seems sturdily built — it resisted every effort to crash the program — it can, nevertheless, destroy an entire worksheet with a single click of the mouse. When commanded to close its window or to load a new worksheet, MacPlan fails to issue the familiar "Save changes?" prompt, and any unsaved work is instantly lost for good.

Moreover, the "Save" command does not bring up the "Save As … " dialog the first time it is used; the program simply saves the active spreadsheet under the name "Current Worksheet," and in the process wipes out other data previously saved under that name.

Ease of use and learning:

Navigating the worksheet may be cumbersome, but the program is otherwise a breeze to learn and use. Since it conforms to all the standard spreadsheet conventions, MacPlan could be useful for training novices, and veterans will have no trouble putting the available tools to effective use.

MacPlan installs its own menu, with a small set of formatting and graphing commands, on the menu bar.



150000

	C	D	E	G	H	I
1			**BALANCE SHEET			
2						
3	86			86		**RA
4	-----		ASSETS	-----		
5	520,000		Current Assets:			CURRE
6	3,000		Cash------------------	$4,000		CURRE
7	$517,000		Accounts Receivable --	$40,000		TOTA
8			Inventory-------------	$52,000		FIXED
9			Prepaid Expenses ----	$0		
10	143,000		Other-----------------	$0		INVEN
11	60,000		TOTAL CURRENT ASSET	$96,000		INVEN
12	3,000					
13	206,000		Plant, Property, Equipm			AVER
14	$311,000		Land and Buildings----	$175,000		NET S
15			Leasehold Improvemen	$3,000		NET S
16			Furniture and Fixtures	$9,000		
17	75,000		Equipment------------	$16,000		Numb
18	12,500		TOTAL PLANT AND EQUI	$203,000		BOOK
19	5,000					LONG
20	100,000		TOTAL ASSETS	$299,000		EARN

Continued on next page

continued from previous page

Only one command key equivalent is provided, the standard Mac spreadsheet "Command-=" to start recalculation. Strangely, the command that forces MacPlan to treat a numeric entry as a label requires a keyboard sequence, and there is no way to access this feature with the mouse.

Documentation

MacPlan's documentation is limited to the SideKick manual, and no on-line help is provided. The paperback manual includes brief but clearly written instructions, but they are split inconveniently into two separate sections. The first is a helpful tutorial that walks the user through nearly every MacPlan feature. The so-called reference section, however, is only 16 pages long, and, for the most part, is just a simple command summary. One crucial topic, the proper syntax for formulas and functions, is completely omitted. This proved especially aggravating because some examples given in the tutorial are incorrect and will not execute properly.

Summary

SideKick's MacPlan is not for everyone, but it may be just the thing for those who do not need mammoth spreadsheets or esoteric calculating functions, and it makes a good set of training wheels for beginners. When coupled with other SideKick utilities, MacPlan represents a real bargain for users with only simple spreadsheet needs. — *By Steve Cummings*

MicroSoft Works

Microsoft Corp. ☆ ☆ ☆
16011 NE 36th Way, Redmond Wash 98073; (800) 426-9400
$189 (street price); **$295** (list price)
Not copy protected.
Works is comparable in capacity, functions and performance to stand-alone spreadsheet programs. It is well-integrated with three other applications but lacks a macro capability and has a cumbersome graphics feature.

Since its introduction last fall, Microsoft's Works has consistently placed among the top 10 best-selling Mac software packages and with good reason. Combining a word processor, flat-file data-base manager, communications package and spreadsheet in a single omnibus program, Works succeeds by coupling a judicious selection of the most useful features in each application area with efficient use of the Mac's inborn capabilities.

That said, it should be added that compromises were inevitable in designing a program that handles all these functions and yet still fits on a single 400 Kbyte floppy disk.

Here, our attention is focused on the Works spreadsheet. Does the spreadsheet measure up to the standards set by its stand-alone competitors, or is it hamstrung by the sacrifices required for integration?

Features

In sheer capacity, at least, Works' spreadsheet application is equal to almost any job. Theoretically, this spreadsheet can hold 9,999 rows by 230 columns. In practice, the number of cells that can actually contain data is limited by available memory to about 7,500 on a 512-Kbyte machine and 22,500 on a Mac Plus or the equivalent.

Works may have 30 or so fewer functions than stablemate Excel, but its repertoire includes most of the important trigonometric, logical, financial and statistical routines. Curiously, however, time and date functions beyond basic time and date stamping are missing. A "Paste Function" command allows the user to insert any function within a formula by selecting it from a dialog box list.

For users who process data regularly, the program's most glaring shortcoming is its lack of macros. Works is not the only Mac spreadsheet with this deficiency, but it still suffers when sophisticated operations are used.

Formatting options are complete enough to suit most needs, though they are not as comprehensive as Excel's. Numeric cell entries can be displayed as percentages, in dollars and cents or in exponential notation, and a fixed number of decimal places can be specified. The contents of any cell can be aligned at either edge of the cell or centered, and can be underlined or put in bold face.

To view separate sections of a large file simultaneously, the user can split the Works spreadsheet window both vertically and horizontally. With only one split permitted in each dimension, Works offers less flexibililty for temporary layout alterations than SideKick's MacPlan. On the other hand, each section of a split spreadsheet can be scrolled independently.

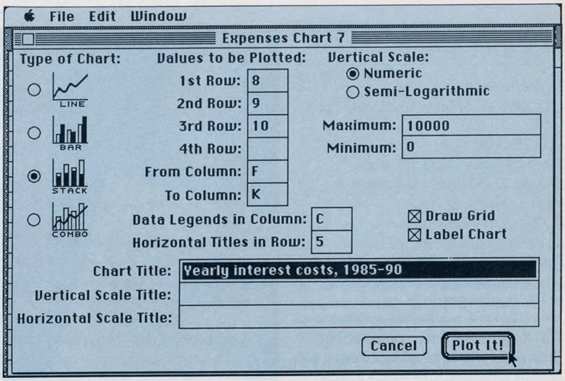
Useful miscellaneous spreadsheet features include a "Find" command for locating a cell by its coordinates or by the values it contains (but not by text in a formula) and a sort routine for reordering rows according to the contents of up to three columns. Works lacks other advanced features, such as cell and range names, cell annotation and auditing trails, found in some stand-alone spreadsheets.

Works' charting feature is satisfactory if not spectacular. The standard range of formats is available, including the combination bar/line type. The format and a variety of labeling options are selected from a chart definition dialog box, and these definitions are stored with the spreadsheet so that charts can be redrawn instantly.

When the user resizes a chart window, Works scales the graphic to fit rather than simply clipping it off at the edges. This capability is handy for viewing a chart and the spreadsheet at the same time, but, unfortunately, only one graph can be on the screen at once.

Works shines when it comes to handling multiple files and interchanging data among its applications. Up to 10 Works "documents" (spreadsheet, database, word processor and communication files) can be open at once, in any combination. Spreadsheets, however, cannot be linked. Any portion of a spreadsheet can be copied to a text document, preserving its format, or to a database table. Entire charts also can be transferred to the word processor, where additional text and even some simple line graphics can be added.

One feature that sets Works apart from other spreadsheet programs is that it allows the user to continue working while the communications program is sending or receiving another file. For users who send or receive long documents, this can be a valuable bonus.



Expenses Chart 7

Type of Chart: ○ LINE ○ BAR ● STACK ○ COMBO

Values to be Plotted:
1st Row: 8
2nd Row: 9
3rd Row: 10
4th Row:
From Column: F
To Column: K

Vertical Scale: ● Numeric ○ Semi-Logarithmic
Maximum: 10000
Minimum: 0

Data Legends in Column: C
Horizontal Titles in Row: 5
☒ Draw Grid
☒ Label Chart

Chart Title: Yearly interest costs, 1985-90
Vertical Scale Title:
Horizontal Scale Title:

To generate graphics from Microsoft Works, cell coordinates and format options have to be entered in a chart definition box. Unfortunately, the box blocks out the spreadsheet and charts.

Performance

Works performs its calculations in the background, allowing the user to continue to make entries or move around in the spreadsheet without noticeable delay. Recalculation time, nevertheless, is snappy, and a toggle that allows "manual" recalculation (that is, recalculation only on command) will likely see little use. Scrolling is smooth and reasonably fast, and the program takes only two or three seconds to draw a chart.

Ruggedness seems to be another of Works' virtues. It reacted with commendable calm as various types of files were loaded up to the limit of memory and multiple inter-application data transfers were conducted. The program will, however, hang temporarily if its communication application is started without a modem connected. When run with Switcher, Works thought it had run out of memory after a Desk Accessory or two had been started and closed.

Ease of use

Overall, Works' spreadsheet commands are sensibly implemented for easy, intuitive use. Functions, formula syntax and keyboard usage conform to the standards set on other Mac spreadsheets. Plenty of simple command key operations for tasks such as filling a row or column with a value or formula complement a set of well-organized, self-explanatory menus.

This straightforward simplicity, however, is marred by the cumbersome charting feature. Instead of automatically graphing the selected spreadsheet cells, the charting routine requires the user to type in the cell range to be graphed. In itself this would be a minor nuisance, but the graphic definition dialogue box fills up the whole screen so that the user cannot refer to the spreadsheet for the correct cell coordinates. In addition, graphs cannot be viewed while changing the definition form, so the user has to rely on memory and trial and error while correcting or fine-tuning the chart.

Aside from the inconvenient graphing function and the inherent complexities of the spreadsheet genre, Works will pose no difficulties to the new user.

Documentation

Works is accompanied by two Microsoft standard-issue spiral-bound manuals, a tutorial and a complete instruction manual, which is less formal than a conventional reference guide but just as complete. The documentation is superior, with clear, thorough treatments of subjects such as function usage and formula syntax, helpful appendices covering topics like file import/export and LaserWriter printing, and a full index.

The program's effective help system is context-sensitive to the extent that it knows which of the four Works applications is currently active. After the "Help" window appears and displays a general message pertinent to that application, the user can receive specific instructions on any command by selecting that command from its menu.

Support

Microsoft provides excellent, though not toll-free, telephone support for Works. Calls usually get put through quickly, and the staff is friendly and relaxed as well as competent.

Summary

Works' spreadsheet does not pack all the power of Excel, but a lot of users will never challenge its limitations. The fact that three other solid, full-scale applications are part of the package and that they can share information in simple and meaningful ways, makes Works at $295 an excellent deal. — *By Steve Cummings* ■

CORRECTIONS

In our issue of May 25, 1987, we criticized General Computer for offering a warranty of only 90 days on the FX/40 external SCSI hard disk drive. General Computer reports it has extended the warranty to one full year.

Our review of PageMaker 2.0 (MacWEEK, June 1, 1987) included a caption to a screen dump indicating the user could specify page sizes up to 11 inches by 17 inches. Actually, PageMaker 2.0 is able to handle even larger-size pages, up to a maximum of 17 inches by 22 inches. ■

COURTESY ABATON

Abaton's flatbed simplifies alignment

The Abaton 300FB costs $200 less than the first scanner, the Scan 300A, introduced by Abaton. It is also one of the first flatbed scanners to reach the Macintosh market.

Flatbed scanners generally are easier to use than sheet-fed scanners because sheet feeding is inherently imprecise. Sheet-fed logos or other materials with horizontal lines rarely scan perfectly level. Artwork can be aligned using the scanning surface edge of the 300FB.

Abaton would do well to add some much-needed features. Unlike the Scan 300A, the 300FB cannot reduce to 25 percent. And the 300FB is unable to export files to Adobe Illustrator. Abaton has promised that this will be resolved in a future software update.

Abaton Technology Corp.
7901 Stoneridge Drive, No. 500
Pleasanton, Calif. 94566
$2,295 (list price)

Relieve keystroke tedium with Tempo

Affinity has improved one of the most powerful Desk Accessories by adding two key features. The new Tempo can be installed even if the addition exceeds the 15-Desk Accessory limit. Furthermore, 1.2 is compatible with the Macintosh II and SE. In fact, when used with the extended keyboard, Tempo can record a whopping 959 key codes.

Tempo reduces repetitious chores, such as pulling down a menu and selecting an item from a dialog box, into any combination of the Shift, Option and Command keys. A simple routine to eliminate transposition errors proves Tempo's value immediately. Tempo is able to coexist with AppleShare and InBox.

Affinity Microsystems Ltd.
1050 Walnut St., Suite 425
Boulder, Colo. 80302
$99 (list price) **$55** (street price)

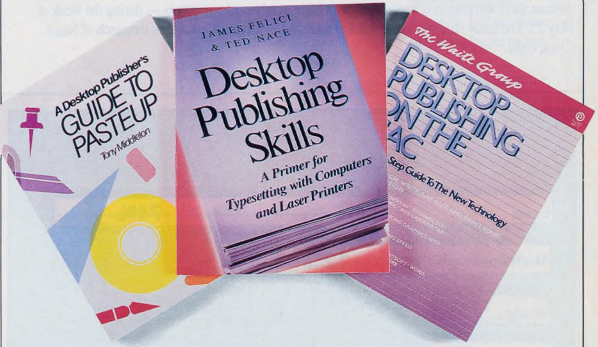
New Features! Version 1.2
Tempo
VERSION 1.2
Tempo
Intelligent macros for the Macintosh.
Affinity

PAUL MORRELL

Improving publishing skills with books

The boom in desktop publishing continues to feed ancilliary industries. Books, in particular, seem to appear from everywhere.

Three desktop publishing books that have appeared recently are: James Felici and Ted Nace's *Desktop Publishing Skills* (Addison-Wesley), Tony Middleton's *A Desktop Publisher's Guide to Pasteup* (PLUSware, Inc.), and Kevin Rardin's *Desktop Publishing on the Mac* (The Waite Group).


A Desktop Publisher's GUIDE TO PASTEUP
Tony Middleton
JAMES FELICI & TED NACE
Desktop Publishing Skills
A Primer for Typesetting with Computers and Laser Printers
The Waite Group
DESKTOP PUBLISHING ON THE MAC
Step Guide To The New Technology

Desktop Publishing Skills is a collaboration between two editors of *Publish!*, a desktop-publishing magazine. Their sophistication shows. They chose the relatively unknown MagnaType system to typeset *Desktop Publishing Skills*. It also shows in the way the information is presented.

The book starts with a definition of the publishing process. Along the way, *Desktop Publishing Skills* defines common printing and typesetting terms, including a good discourse on hyphenation routines.

Included are discussions of publishing systems, even briefly touching upon workstations as well as page-description languages, RIPs, image scanners and pagination software.

Desktop Publishing Skills is recommended for those who seek a thorough understanding of all aspects of electronic publishing.

Middleton's *Guide To Pasteup* uses a different approach. The entire book was created with Ready,Set,Go! 3. It relies more on illustration and photography. Many of the graphics in the book were created with Cricket Draw. The author walks you through the paste-up process by explaining more of the nitty-gritty that makes printing so interesting and enervating: production schedules, how to use adhesives, working with printers, choosing paper stock, etc.

Guide To Pasteup is definitely recommended for the hands-on experience of desktop publishing.

Kevin Rardin has produced the perfect publication for those who are intimidated by the thought of publishing their own documents and need handholding all the way.

After explaining the basics, *Desktop Publishing On The Mac* proceeds to show the step-by-step creation of an imaginary newsletter using Microsoft Word, MacDraw, PageMaker, Thunderscan and even Switcher. Useful items covered include how to edit an Excel chart in MacDraw and how to edit scanned images in MacPaint.

Desktop Publishing On The Mac was produced with Microsoft Word and PageMaker.

Desktop Publishing Skills, Addison-Wesley Publishing Co. **$19.95**

A Desktop Publisher's Guide To Pasteup, Tony Middleton; PLUSware, Inc. **$15.95**

Desktop Publishing On The Mac, Kevin Rardin; The Waite Group **$22.95**

Psst! Want to hypercharge your SE?

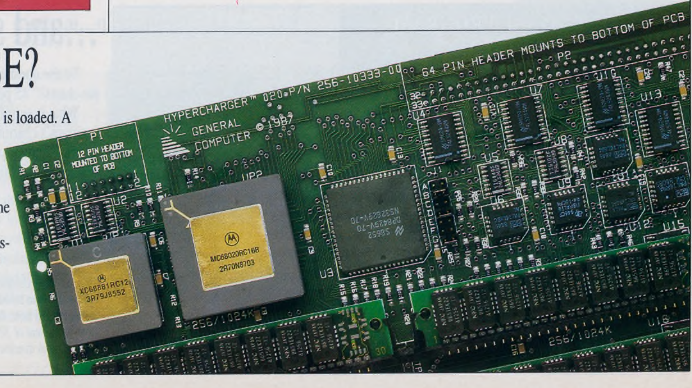
From the same company that HyperDrove the Macintosh comes HyperCharger 020, an accelerator board for the Macintosh SE.

Putting a 68020 microprocessor in a Macintosh SE does not automatically turn it into a Macintosh II. There are several technical considerations that prevent that from happening, including the use of slower memory in the Macintosh SE (8MHz) and the 16-bit data path. The 1Mbyte of memory that the General Computer adds, however, runs at 16MHz.

If there is any doubt that there is a faster microprocessor at work, it quickly disappears once a database like OverVUE is loaded. A 2000-record file sorts in a flash.

Is it worth $1,499? That depends on individual use. General Computer is making the proposition more attractive by offering a 68881 math coprocessor through June 30 for $1,699 instead of the usual $1,899.

General Computer
215 First St.
Cambridge, Mass. 02142
$1,499 (list price)


64 PIN HEADER MOUNTS TO BOTTOM OF PCB
P2
HYPERCHARGER™ 020 P/N 256-10333-00
GENERAL COMPUTER ©1987
P1
12 PIN HEADER MOUNTED TO BOTTOM OF PCB
XC68881RC12
MC68020RC16B
2R70N8703
256/1024K

COURTESY HYPERCHARGER

Focus: Spreadsheet software

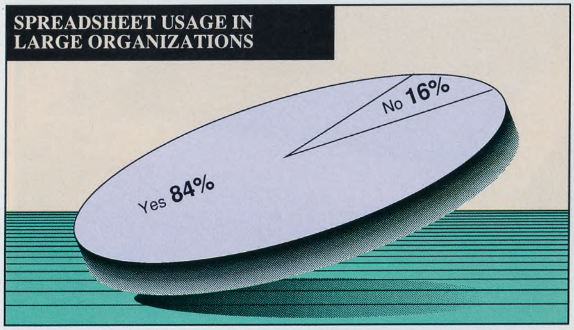
BY BILL LANGENES
Creative Strategies Research

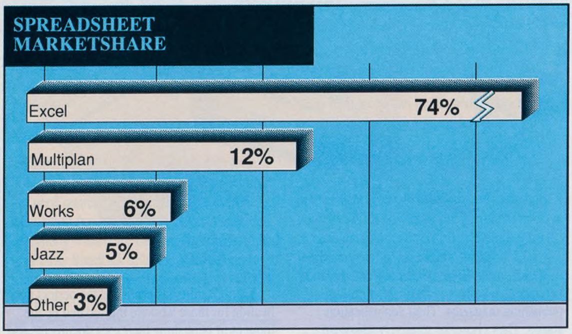
A telephone survey of MacWEEK readers shows that 84 percent of Macintosh users in large organizations do numerical analysis with spreadsheet software.

The widespread use of spreadsheet programs by these key individuals is a telling indication that the Macintosh can no longer be thought of as a publishing-only tool.

By contrast, desktop publishing was mentioned by 72 percent of the same users while virtually all (99.7 percent) do their own word processing.

These findings were uncovered in a telephone survey of 301 MacWEEK readers — Macintosh volume users working in organizations with large numbers of computers — during the week of May 25. The study data was compiled and analyzed by Creative Strategies Research of Santa Clara, Calif.





Excel dominates spreadsheet market...

According to the survey, Microsoft's Excel dominates the spreadsheet market with even more force than its sister program, Microsoft Word, having achieved a 74-percent marketshare among spreadsheet users that mentioned a brand name.* (Microsoft Word received 60 percent of all brand mentions.)

The second and third most-popular programs are also Microsoft products: Multiplan received 30 mentions while Microsoft Works received 15 out of 242 brand mentions. Lotus' Jazz finished fourth with 12 users mentioning the title.

Bravo Technologies' MacCalc, Paladin's Crunch/SuperCrunch and DataTailor's Trapeze round out the remaining spreadsheet brands.

* Note: The marketshare data reflected in the chart at left are based on 242 brand mentions. The 16 percent that do not use spreadsheet programs are factored out of the calculation.

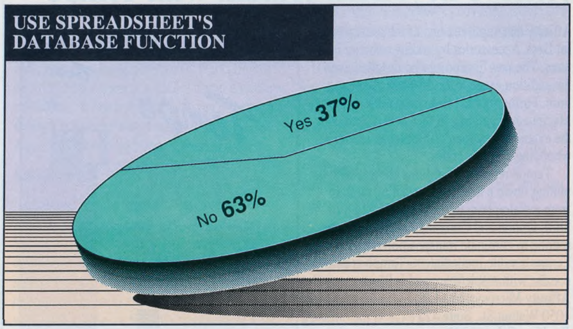
...yet most don't use database feature...

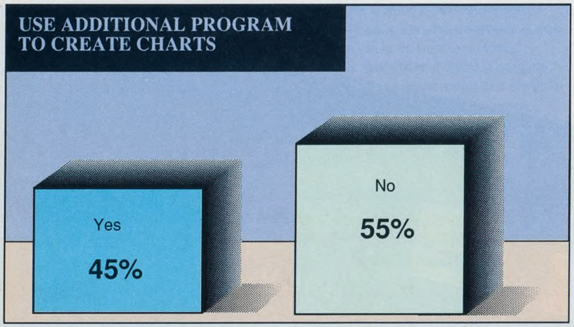
Asked if they used their spreadsheet program to maintain database files, six out of 10 users said "no."

This not-so-surprising result reflects the argument that many observers level against integrating too many functions into spreadsheet programs.

Still, given the high penetration level of integrated spreadsheet programs, the 37 percent that do use the database function remain a formidable force to contend with for marketers of stand-alone database programs.

Excel users tend to utilize the built-in database function slightly more than others, with 41 percent reporting maintaining database files in their spreadsheet.





...and seek other charting software

To the question "Do you use another program in addition to your spreadsheet program to create charts?" 45 percent said "yes" while 55 percent said "no."

What is significant here is that, although the majority seems satisfied with their spreadsheet program's charting capability, nearly half use another program to create or enhance charts.

This finding points to the fact that, in typical large organizations, the level of graphics sophistication is very high, with users demanding the utmost in quality from their charting output. ■

This survey is conducted exclusively for MacWEEK by Creative Strategies Research, a high-technology research and consulting firm based in Santa Clara, Calif. For this survey, an n-th sample of U.S. corporate and other volume users were selected from the MacWEEK subscriber database. Respondents were surveyed by telephone during the last week of May. A total of 301 usable reponses were obtained with a projected response rate of 50 percent. The industries and geographical distribution represented in the sampling are reflective of general U.S. demographics.

PRINTERS

Continued from Page 1

whether Apple's authorized dealers will be able to sell both printers and understand the distinctions between the markets they serve," the analyst says.

However, Apple may be powerless to prevent widespread reductions in the cost of laser printers, especially after the recent announcement of a PostScript clone under development by Phoenix Technologies of Norwood, Mass.

A QuickDraw-based printer from Apple would not necessarily be immune from similar imitation, sources say. QuickDraw clones would allow other printers based on Canon's new engine to compete with Apple's printer.

Koiichi Cododura, Canon's product manager for its Laser Beam Printer Division said he could not confirm or deny reports that Apple will be using the SX engine.

"We are not in a position to disclose who our OEM customers are. But it would seem natural for Apple to continue to work with us," he says.

The new printer would gain considerable advantages by using the SX engine (see sidebar). The high-end Apple LaserWriters and other popular laser printers have been configured around the Canon LPB-CX engine.

Koiichi says, "More than 30 companies use the CX engine in their laser printers. We would like to discontinue the CX, but some customers still want to use it. We cannot discontinue the engine if there is still a demand for it. Apple is still buying the CX engines from us, but I don't know what the company's plans are on future purchases." ■

SHIPPING

Continued from Page 1

remain on allocation for at least three more months and possibly until near the end of the year.

Sullivan's promise was welcome news to many dealers who say they had been expecting only one a month for the next several months.

Shipping figures through December remain the subject of intense conjecture by investment analysts, who know that those numbers are like presidential primaries: Winners can look like losers if they do not do as well as predicted.

Several analysts came up with similar projections for sales through the end of the year: 5,000 this quarter, 25,000 next quarter and 30,000 in the final quarter. Dataquest, the San Jose, Calif.-based research firm, agrees with the 60,000-unit figure for the calendar year but does not break it down by quarters.

One analyst put shipments closer to 25,000 for the year based on bugs in early production models. Another expects 30,000 based on a conversation overheard at Apple.

Yet another says the numbers are unimportant because the Mac II is not expected to be a "financially significant" product until sometime next year.

"They're important to me," says Dan Benton, an analyst with Goldman-Sachs in New York. "That's what I base my [Apple] earnings estimates on."

Benton is bullish on the Mac II's sales potential, saying its "real value is that it's the leading edge for functionalities." Also, he says, "You can't downplay speed." If just 5 percent of current Mac owners decided to upgrade to a Mac II for speed, Benton says, "that's 60,000 right there."

One West Coast analyst says he has been hearing complaints about the monochrome screens on some production units. Apple is not having trouble producing Mac II systems, he says, "but they're not sure how the ones they're making are working. The last thing they want is a bunch of machines out there that don't work."

He predicts Apple will go slow on shipments until the bugs are resolved.

Reports of monochrome monitor problems and other bugs in production models are spotty. Of the five Mac IIs Peat Marwick's San Francisco office received recently, two had problems with the screen. But the company's New York office received 12, and all are up and working. ■

Palantir offers intelligent text-scanning product

SANTA CLARA, Calif. — This week Palantir will announce a new version of its CDP (Compound Document Processor), a combination scanner and intelligent text recognition unit. The product, called the Recognition Server, does not include the scanner, enabling users to buy any of a variety of scanners on the market.

While less expensive scanners may scan graphics as well or better than Palantir, they can only scan text from a limited number of typewriter and LaserWriter printer fonts. The Palantir, in contrast, can read almost anything printed, including material from books, magazines, printed forms, or newspapers.

Output from the Palantir is accessible to Macintoshes now as ASCII text, but before the end of the year, Palantir's software should run on the Mac. The CDP originally worked only with the Sun workstations operating under UNIX. Though Sun's user interface with Palantir will seem very familiar to Macintosh users, being menu driven, with a mouse and high-quality graphics, the Macintosh interface should be more intuitive and more faithful in its screen representation of the original document. New software permits Palantir to work with MS-DOS machines as well.

The two companies developing hardware/software interfaces between Palantir and the Macintosh are primarily value-added resellers of optical disk data storage systems.

Imageering of Memphis, Tenn., has massive graphics databases in place with the television networks. Conversion Dynamics Inc. of Birmingham, Ala., is developing its system primarily to replace microfilm storage facilities.

The Palantir CDP retails for about $40,000. The Recognition Server will be offered by Palantir to resellers for about $10,500 in quantities of 100. ■

Canon's laser engine: The latest in printer technology

If Apple Computer Inc. adopts Canon's new LBP-SX laser-printer engine for its future printers, it would join Hewlett-Packard as the second major printer manufacturer to move to the new technology.

Both companies made their laser-printer reputations with printers built around Canon's first-generation engine, the LPB-CX, but some analysts expect Canon plans to phase out the CX by the end of the year.

The term "laser engine" refers to a package available to OEM manufacturers that can include virtually an entire laser printer or some of its parts. The power supply, printing mechanism, controller circuitry and even the case are often included, since these are integral to the engine's operation. What is usually not included is the page description language, like PostScript, that is necessary for sophisticated page layout and design.

The Canon engines work on the "write black" principle. As paper is fed through the machine, a laser flicks on whenever the controller board tells it that a dot is needed on the page. The toner is then attracted to any dots that have been exposed by the laser and is fused to the paper by heat and pressure.

The SX prints pages at the same eight-page-per-minute rate and 300 dots-per-inch resolution as the CX.

However, the SX engine is shorter, lighter, quieter and more ergonomically designed than its predecessor. It also collates pages automatically and has a longer guaranteed duty cycle.

Canon declined to quote OEM prices for the SX engine, but the $2,495 retail price of the HP Series II suggests a low enough cost to fuel a new wave of cheap SX-based lasers.

— By Robert Cowart

LETRASET

Continued from Page 1

tools are right under the Title Bar. "Now you can take up the whole screen with the document," he says.

Release 4.0 also will let users generate color separations. Other enhancements include search-and-replace commands that allow users to specify font and font style and the ability to remove or add space between words. Users will have increased control over hyphenation and enhanced tabs for setting up forms, Klauber says.

The program will support high-resolution graphics. "Users can open TIFF or Encapsulated Post Script files directly," he says.

The second program to be introduced at MacWorld, Realist, will let users create camera-ready art, including halftones, with their desktop-publishing programs. "In the past, users have had to block out pictures and insert the photograph later," says Michael Rennert, product manager.

The program takes advantage of the ability of the new generation of 300-dpi gray-scale desktop scanners to represent an image in different shades of gray rather than with dithering, a random pattern of black dots.

Realist primarily will be used to edit and size continuous tone images such as photographs, says Rennert, adding that "until now there has been no good way of doing that." Resizing a dithered image meant creating undesirable moiré patterns, he says.

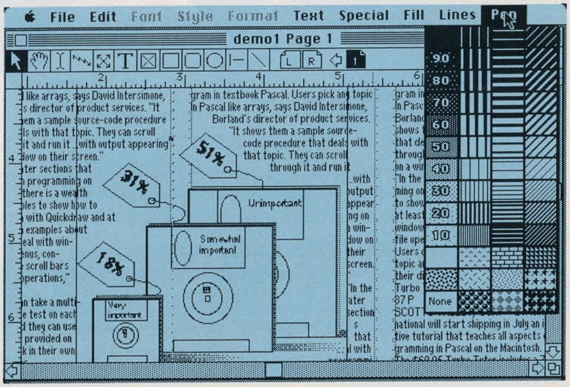
With Realist, users will be able to edit images down to a single gray-scale pixel, a procedure similar to FatBits in MacPaint except that each dot on the screen can be one of many shades of gray.

The halftone produced on a laser printer or typesetter is a true rather than dithered halftone. Different shades of gray are represented by patterns of black dots.

Realist will be able to handle at least 64 different levels of gray. Most scanners priced under $3,000 support 16 levels, though some go as high as 32, he says.

Realist will produce both TIFF and Encapsulated PostScript files, he says, making it compatible with not just Ready,Set,Go! but with other desktop-publishing programs like Quark XPress and PageMaker. ■

Ready,Set,Go! 4.0 has a completely redesigned user interface with the tools located beneath the Title Bar.



gram in textbook Pascal. Users pick any topic
In Pascal like arrays, says David Intersimone,
Borland's director of product services.
"It shows them a sample source-code procedure that deals with that topic. They can scroll through it and run it

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MAC THE KNIFE

Emily, my keyboard maiden, your touch is ever so light this day.

"Really, Mr. Knife. Will you please stop? I need information, not your, your ... whatever you call it," the young woman types.

For you, Emily, anything. Would you like a Radius accelerator board and a full-page display screen? Of course you would. Even as you read this, nimble fingers are assembling those boards. Radius has planted a Stepping Out-like feature in the page display that auto-scrolls over the page when the mouse is moved to the side. I guess that's for reading margin notes.

The accelerator boards are more interesting, however. They and the full-page-display software have special "control panels." You may punch the button at boot-up time, Emily, and turn the 68020 off completely. Radius' SE accelerator card is supposed to be in the UPS trucks a few days before any July 4th picnic. Does that not arouse you, my dear? I thought not. Perhaps this then. There's no RAM aboard the accelerator itself.

Accelerator this, hard drive that. Much grumbling of late abut General Computer's HyperDrive. Calls for support usually result in the phone number of your nearest dealer, and GC's internal software has some problems with the new Apple System: It doesn't work.

What else doesn't work with the Apple System? Apple SEs. Seems some of the platinum queens come with Rodime hard drives, others with Miniscribe. But a version of Apple's install program won't work on the Miniscribes. The Johnny Appleseeds have set up an in-house SWATT (Systems Will Always Take Time) team to troubleshoot that and other reliability problems, though they spaketh not a word to the public or press.

Not a word either about Apple's "Moosehead." I speak not of the ale, but the Striped Wonder's 300-dpi scanner shipping in October. *This* October. May handle gray-scale software.

Do I speak of gelt, Emily? Indeed, and did you receive your $50 from Microsoft yet? The return address reads "Somewhere in Wash." and the letter promises 50 George Washingtons if you buy Excel. Right now. Of course you were not a recipient if you're not a registered buyer of MS Word or PageMaker.

The 50 bucks is only a rebate — keeps down the bookkeeping. Or if it's not money you're after, you may have a copy of SuperPaint. The Knife thinks marketshare is the name of this game. And with Galaxy in the wings, "Gather those users around our *campfires*," say the young and old Softies. But why SuperPaint? And why a PageMaker mailing list? Maybe the (list) price was right.

There will never be a 5th Dimension piece of software, you know, unless it sings harmony. But the Big Apple itself lusted mightily after the 4-D until Ashton-Tate put the old kabosh on that marketing scenario.

As for A-T, dMac is reportedly in the last beta. This must be .99995, but that's OK. Seems the Tate-ers had problems getting it to dance with the melody played by Apple's new System 4.1/Finder 5.5. The Knife, an empathetic character he, knows whereof they be. His info network has had some difficulty learning that rhythm, too. And that, Emily, is positively my last word about 4th Dimension.

"Oh, Mr. Knife, you're such a kidder."

Ah, my bibliographic beauty, I kid you not about this next one. As we were so enamored with the days of 64K RAM, and then 128K, it may be late afternoon for the era of the 20 M-byte hard drive.

You remember Wild Card? It's now called Hyper-card? Hype-snipe, the full-blown, pull out ALLLLLLLLLLL the stops of that eighth-wonder program fills up 11 — count 'em, 11 — megabytes of disk space but mostly with data. There's some educational stuff built in, along with multiple data bases, music and speech functions.

But 11,000,000 bytes? Fortunately for my Macbrothers and Macsisters in the service of U.S. Postal, the first version will only ship as four disks, about 3.2 megs, but some data files are 1.7 M-bytes long. It'll take a three-day weekend to load 'em.

It's no wonder then that there's yet another international shortage of ... 3.5-inch disks. Stock up now; it's going to be a dry six months. Word on the street is that Apple, IBM and Microsoft have spoken with great volume for all Sony can supply. Worldwide. Step up Fuji, forget about that color film. Maxell, crank up those lines. You, Memorex, no more sweet Ella Fitzgerald, give us blank disks or ...

* * *

A mug for your morning caffeine? Mac the K has it if you're a tout with a tip. MCI: "MactheKnife." Talk to me, pal. ■

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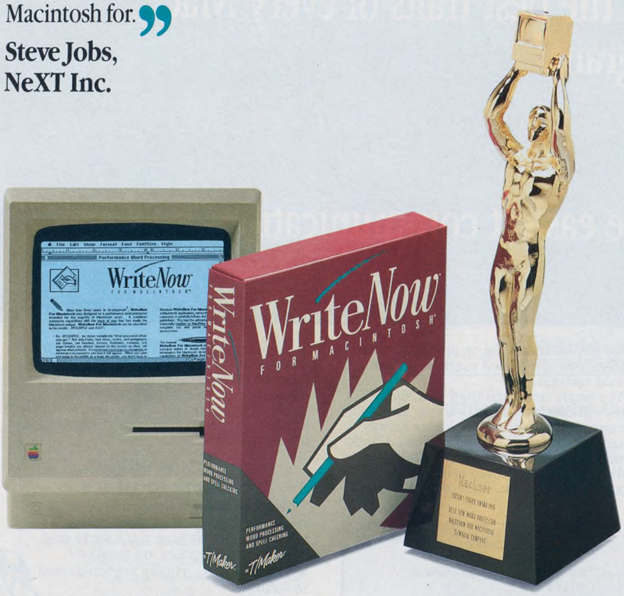

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